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THE NEUROLOGICAL ASPECTS OF FOOD POISONING.*

By Arthur Willard Fairbanks, M.D., Boston.

The neurological features of food poisoning seem to be a somewhat neglected subject in the domain of neurology.

This is perhaps because as a rule the dominant feature of the symptom-complex in these cases is that of a more or less marked gastroenteric disturbance: nausea, vomiting, abdominal pain, diarrhoea and the varying degrees of physical prostration incident to such disturbance.

Careful scrutiny of the symptom-complex, however, even in such instances, reveals the fact that the nervous system by no means escapes implication.

Further scrutiny of the many cases reported, moreover, reveals the fact that there are some cases in which the predominant features of the symptomatology are neurological, while the gastro-intestinal phenomena are entirely subordinate and incidental, or may be entirely lacking.

In any consideration of this subject it is necessary to divide instances of food poisoning into those wherein the poison is an intrinsic or natural constituent of substances used as food, and those wherein the poison is of extraneous origin, and does not naturally occur in the food.

Among the intrinsic poisons, we have to consider those that are found in fish, shell-fish, fungi, and certain vegetables, such as potato.

First among poisonous fish are those of the tetroden and allied genera. They are widely disseminated along the coasts of Japan, China, the East Indies and Africa. While long known to be poisonous, they are not infrequently eaten, either through mistake or ignorance. This is especially apt to occur because many species of this genus, if not all, are edible in part, but not entire. Thus the mussel may be eaten if the roe, the ovarian tissue and the liver are carefully removed.

The poison contained in these fish has been studied by Takahashi and Inoko,[1] Miura and Takesaki[2]. It resembles the curare type of poison. It is not destroyed by cooking, although prolonged cooking materially weakens it. Tahara isolated two toxic substances, one crystalline, tetrodonin, the other amorphous, tetrodonic acid. Their action on animals is that of a rapid paralysant of certain parts of the central nervous system, especially the respiratory centre, with a vaso-motor paralysis, and a curare-like paralysis of the motor nerve terminations. The heart is not directly affected. The symptoms produced by this form of poisoning in the human being are headache, obstinate vomiting, severe dyspnoea, cyanosis, contracted pupils, and progressive general paralysis, including the speech and the sphincters; ending in death in from ½ to 3 hours (ichthysmus paralyticus). Occasionally paraesthesiae and blindness are complained of.

In animals there occur restlessness, vomiting and other gastro-intestinal irritation, salivation, severe dyspnoea, progressive paralysis, and death by respiratory paralysis. Small amounts cause only light paretic symptoms.

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In frogs, paralysis of the nerve-endings and spinal cord centres, with marked retardation of heart action.

Some idea of the virulence of this poison may be inferred from the following cases: While off Cape of Good Hope, a boatswain and a steward ate the liver of a toad-fish (Tetrodon Honkengo. Bloch). The boatswain died in twenty minutes, the steward in seventeen. The weight of the liver is estimated to have been not more than 4 drachms. At 2 P. M. a Japanese ate five pieces of an unknown species of tetrodon. At 6 P. M. he complained of distress in the epigastrium and became generally and completely paralyzed, with cyanosis, diminished respiration, dilated pupil, loss of corneal reflexes, subnormal temperature. At 7 P. M. death occurred.

These eastern fish, however, are not alone in the possession of poisonous properties. Certain common fish of Europe have long been known to be poisonous.[3]

Usually not the entire fish but some particular part possesses these toxic properties, just as is the case with many of the tetrodons. These parts, as is true of the tetrodons also, are especially the roe and the ovaries, sometimes the liver and bile. These parts may be always toxic or they may be so only at a particular time of the year, especially during the spawning season. Then even the meat itself seems sometimes to acquire toxic properties, notably in the sturgeon.

Among the European fish, some part of which is poisonous, are the pike (roe and ovaries, during the spawning season); the barbel (roe, especially in May), a large fresh-water fish; the sturgeon (mussel during the spawning season); the cackerel, a small Mediterranean fish; the tench (ovaries); the carp (ovaries); the bream (ovaries); the poisonous perch (perca venosa); rarely the cod; the river lamprey, the eel (blood); the sheath-fish (silurus glanis, head); the goby (entire fish).

The symptoms caused by these fish are in human beings as follows: the pike: gastroenteric disturbances; the barbel: vomiting, severe abdominal pain, diarrhoea, dryness in mouth and throat, intense thirst, urticaria and sometimes scarlatiniform cutaneous manifestations, dilatation of the pupils, painful spasm in the calves, and severe collapse. Prognosis favorable. Similar symptoms are caused by the cackerel, the cod, and the poison perch. Prognosis grave.

In the sturgeon group (Accipenser) we find: gastro-enteritis, dyspnoea, dysphagia, aphonia, collapse and death. Prognosis grave.

The carp, tench and bream: diarrhoea. The river lamprey: severe bloody diarrhoea. This fish is said to be harmless if it is strewn with salt while alive, and the resulting slime removed. The fresh blood of the eel is very poisonous. Several deaths have been reported, preceded by diarrhoea, dyspnoea, pulmonary oedema, and collapse. Mosso[4] found in the blood of the anguillo, the conger, and the murena, a toxalbumen "Ichthyotoxicum." All parts of the goby are poisonous, producing in from an hour to an hour and a half, progressive general weakness, ending in collapse and death.

In all of these instances the fresh fish, whether raw or cooked, is referred to.

Certain other fish are toxic only when they have fed on some special kind of food. This seems to be the case with the meletta venenosa and with the clupea thrissa and venenosa (poison herring).

Certain fish of the West Indies have been noticed to be toxic only when caught off certain reefs, but not elsewhere.

Occasionally poison employed to catch fish has been the source of human poisoning. For this purpose picrotoxin, also the euphorbia group of plants and the roots of the cyclamen Europaeum, also many of the digitalis-like group of poisons, are used. This custom does not prevail in this country, as far as I am able to ascertain.

Most of the instances of serious poisoning by shell-fish, as we shall see later, are due to extraneous toxins, usually produced by bacteria, in all probability. This leaves for consideration here only those quite frequent but rarely serious disturbances experienced by some people whenever they eat lobster, crabs, mussels and sometimes oysters. Urticaria, itching, erythema of various forms, acute cutaneous oedema and mild gastro-intestinal disturbances usually comprise the clinical symptoms. The acute oedema seen in many of these cases sometimes reaches an extreme degree. It may be circumscribed or general. Giant urticaria sometimes occurs. Both of these conditions indicate profound disturbance in the vaso-motor system and, with the restlessness and insomnia, due usually to intense pruritus, form the nervous manifestations of the affection. These instances are typical of toxic phenomena due to individual idiosyncrasy, such as is not infrequently seen in the case of certain drugs.

Among the intrinsic food-poisons most interesting to us are those contained in fungi. Instances of such poisoning are becoming more and more frequent with the increase of our immigrant population, especially that from southern and southeastern Europe, with whom fungi form an important article of diet. The proverbial carelessness of these people, the extent to which they forage the woods and fields for additions to their provender, and the considerable variation in color of our American fungi, compared with similar European genera and species, are all responsible for this increasing frequency of poisoning.

The most common and serious danger emanates from the genus Amanita, which appears in many varieties throughout the country and in great profusion. Among these amanitae are but two containing distinctly different poisons.

The amanita muscaria alone contains the well-known poison muscarine, the other species contains phallin.

The amanita muscaria is the most common of the poisonous amanitae in the woods about this city.

The symptoms of poisoning from this fungus appear from eight to twelve hours after eating and consist, in the beginning, of vertigo, faintness, abdominal pain, intense thirst, painful spasm in the extremities, tachycardia and falling blood-pressure, salivation, sweating, pallor, slowing of the respiration, contracted pupils, dimness of vision, occasionally diplopia, mental excitement or exhilaration, delirium and coma. Vomiting and purging may occur early but are usually late symptoms. Later in severe cases increasing frequency and feebleness of pulse, shallow stertorous respiration, stupor, coma, and rarely convulsive phenomena, preceding death.

Individual cases do not necessarily present all of these phenomena. As is seen the gastro-intestinal symptoms are of minor prominence, while the nervous phenomena are conspicuous.

There is good reason for the assumption that this fungus contains some other poison. It is certainly poisonous for flies when it is in the fresh state. Muscarine is however not toxic for flies. Moreover many of the above symptoms are not characteristic of muscarine poisoning *per se.*

Atropine is the physiological antidote of muscarine, and if given early either to animals or humans exercise a very definite influence on many of the symptoms, especially those that appear early. Nevertheless such cases often die later on, regardless of the administration of atropine, and this late lethal effect is seen when a comparatively small quantity of the fungus has been eaten. This apparent early passing of the symptoms of poisoning, followed some hours later by death, has been noted where no atropine has been administered, both in humans and in animals.

The nervous symptoms produced by this fungus, as is seen, are a powerful inhibitory action on the cardiac ganglia, a marked influence on the vaso-motor system, as evidenced by profound reduction of blood-pressure, increased perspiration and salivation, contraction of the pupils, dimness of vision, diplopia, slowing of the respiration, rarely mental excitement, eventually stupor and coma, very rarely tetanic or clonic convulsive phenomena.

In Russia this fungus is dried and used as an intoxicant. Certainly in this country minute quantities do not have any exhilarating effect. Quite the contrary, in fact. McIlvaine,[5] who experimented on himself with pieces the size of a hazel-nut; found that it produced vertigo, nausea, pallor, exaggeration of vision and respiratory oppression, the effects passing off in two hours, leaving a dull, torturing headache.

The poisonous principles of the other amanitae, the most common of which about Boston are phalloides, citrina, verna, and virosa, produce severe gastro-intestinal irritation, nausea, vomiting, diarrhoea, faintness, pallor, sweating, subnormal temperature, anuria, and, on the part of the nervous system, sopor, stupor, coma, and sometimes muscular twitchings, more rarely convulsions.

The symptoms appear from ten to twelve hours after eating, and death occurs in two or three days.

With the species verna there appears to be more of a tendency to convulsive phenomena, and this is especially evident in animal experiments. Frogs, for instance, do not have convulsions when a solution of the phalloides is injected, but invariably do when solutions of the verna are employed.

With these species, as with muscaria, late symptoms seem sometimes the cause of death, viz.: icterus, hepatic enlargement, hematuria, nephritis.

Besides the amanitae there are a few other genera of which some species are poisonous. Of these, only one has ever had lethal effect as far as known. Curiously enough this is one that for years has been considered, all over the world, as edible, the gyromitra (helvella) esculenta. Were it not that the authenticity in one or two instances seems credible, there would be good reason to doubt assertions of its toxic properties. I give the symptoms as stated by Von Jaksch.[6] He is certainly in error when he states that all of this genus (helvella) are poisonous.

Symptoms ensue five to six hours after eating: vomiting; diarrhoea, often bloody; colic, collapse, icterus, vertigo, trismus, tetanus, delirium, coma, and death in one or two days. Occasionally nephritis occurs. None of the other fungi are lethal in their effects and none of those that are deleterious produce nervous symptoms.

Potato Poisoning. As is well known, the potato (solanum tuberosum) belongs to the nightshade family. The members of this group contain an alkaloidal glucoside, solanin, especially to be found in the common nightshade (solanum nigrum).

While potatoes also contain this toxin, the content is usually too low to have any perceptible effect on human beings. The average content varies considerably with the season. It is largest in May, June and July, when Meyer[7] says it may reach in unpeeled potatoes 0.100 to 0.116 grams per kilo. The largest is always found in and near the skin, the least near the centre. Clarus[8] states that the amount necessary to produce toxic symptoms is 0.2 to 0.4 grams per kilo. It is evident therefore that, even assuming that the potatoes were eaten unpeeled and during the season of their highest solanin content, there would not be sufficient, under ordinary circumstances, to cause toxic symptoms.

Diseased or sprouting potatoes contain a much higher solanin content, and Wintgen[9] found in such potatoes a content considerably exceeding the limits of safety.

Meyer found in the dwarf potatoes developed from the sprouts of old potatoes and in old shrunken potatoes, a content as high as 1.34 grams per kilo. Pfuhl[10] found in potatoes causing a severe epidemic among soldiers, a solanin content of 0.38 grams per kilo in the peeled raw potatoes, 0.24 in the peeled boiled potatoes, a content that as will be seen, is above the safety limit. Wintgen was unable to confirm Weil's belief that bacteria influence the solanin content. As solanin is a normal constituent of the botanical genus to which the potato belongs, there seems no good reason to attribute its presence or its increase to bacterial action.

This form of poisoning is characterized by acute gastro-intestinal disturbance, chill, fever, nausea, vomiting, colic, diarrhea (4 to 6 times daily) headache, irritation of the throat, general weakness, apathy and somnolence, rarely coma, and very rarely convulsions. Herpes may occur. Symptoms last about three days. Temperature in Pfuhl's cases 38-39.5 C. Prognosis favorable.

Occupying an intermediate position between the strictly intrinsic and the purely extraneous food poisons are the occasional instances of honey poisoning. The cases are due to the fact that the nectar has been obtained from poisonous plants. Naturally the symptoms are those of poisoning by the particular plant concerned. They need not be considered here.

Mussel Poisoning. Somewhat difficult to classify, since it is not certain as yet whether the poison is intrinsic or is secondary to bacterial contamination, are the instances of poisoning by the common mussel (mytilus edulis). Schmidtmann found that sound non-poisonous mussels, placed in a canal whence poisonous mussels had been obtained, acquired toxic properties, and that, on the other hand, when poisonous mussels were kept in the clean water of the bay they lost their toxic character. This would suggest, as he says, a bacterial origin of the poison.

Mussels are known to contain bacteria of which cultures are virulent for animals, but it is not known whether they are responsible for the poisoning in human beings.

Brieger[11] isolated a substance to which he gave the name mytilotoxin. Salkowski[12] found that the poison was not destroyed by heating to 110° C., but was destroyed by hot sodium carbonate solution.

The symptoms are well illustrated by an epidemic that occurred at Wilhelmshafen.

Some stevedores collected a quantity of mussels from the bottom of vessels. They were boiled, and eaten by them and their families. Several hours after the meal the symptoms appeared and there were nineteen serious cases, with four deaths.

The nervous symptoms in these cases were a choking sensation in the throat, difficult speech, vertigo and burning and tingling in the hands and feet. In addition there occurred vomiting, diarrhoea and extreme weakness.

Death occurred in the fatal cases in from two to five hours.

The post-mortem changes were those of intense gastro-intestinal congestion, enlarged spleen, fatty degeneration of the kidneys and liver, with hemorrhagic foci in the latter.

Unfortunately, like so many of these cases of food poisoning, the nervous system seems not to have been examined.

Poisoning by oysters, if we except the not infrequent typhoid infection transmitted by these shell-fish, is not common. When it occurs it is usually because there are among the oysters eaten one or more that are decomposed. The oyster itself never contains any intrinsic poison. Like other fish it may itself be ill from bacteria taken up from polluted water, and, since it is so often eaten raw, it may cause infection of the human being. These cases are characterized by gastro-intestinal disturbances. It is also possible that bacterial growth in the living oyster may store up sufficient toxin, of a form not destroyed by heat, to cause severely toxic symptoms after being cooked.

The majority of instances of poisoning, however, are due to saphrophytic organisms.

One of the most frequently quoted cases of oyster-poisoning is that reported by Brosch,[13] and this case especially concerns us here on account of the marked involvement of the nervous system. I venture to think that we can account for this case of poisoning, in the light of our present knowledge, from the symptoms alone.

An officer, one of a large party at a restaurant, happened to be the only one to eat oysters. In the light of subsequent events it was recalled that he remarked that one of them tasted bad. Within an hour or two he vomited severely and soon complained of headache and pain in the side, dimness of vision, difficulty in swallowing and speech, salivation, inability to expectorate, and retention of urine. When first seen ten hours after ingestion of the oysters, he had right facial paralysis, dilated pupils, ptosis, strabismus, ataxic gait, and cyanosis. He died from respiratory paralysis, less than twelve hours after the meal. The heart continued to beat two minutes longer. Sensorium was clear to the end.

We see in this clinical picture one closely similar to that caused by a now well-known saphrophytic organism, the characteristics of which we shall learn later.

Extraneous Food Poisons. The acquirement of toxic properties by food ordinarily harmless, is almost invariably due to bacteria. It is quite evident therefore that the particular variety of food concerned in the poisoning is an immaterial factor, except in so far as it may determine the presence of a particular variety of organism. Even this, as we shall see, is dependent less on the variety of food than on the manner in which it has been prepared or preserved.

For this reason, therefore, I shall lay more stress on the character of the organism concerned than upon the class of food involved.

Bacillus enteritidis: First isolated by Gaertner[14] in 1884 during the Frankenhausen epidemic, it has been responsible for innumerable epidemics of food poisoning. It is motile, Gram negative, ferments dextrose with gas formation, but not lactose, and does not form indol in peptone solution. The two important characteristics of this organism from a clinical standpoint are that it is a common source of disease in animals used for food and that it produces a toxin that is not usually destroyed by heat. Another danger lies in the impossibility of distinguishing the meat from such animals from meat of healthy animals, since neither in appearance, taste nor odor is the meat altered.

The symptoms of this form of poisoning, both in animals and human beings, are predominantly those of severe gastro-enteritis, and post-mortem examination confirms this. The incubation period is from one to six days.

Exactly similar symptoms are produced in animals when sterilized cultures are administered either by mouth or subcutaneously; and, in addition to the gastro-intestinal disturbances, these animals present spasmodic twitching and paralysis of the lower extremities, showing that the toxin does possess the power of affecting the nervous system, and that this is not necessarily due to mixed infection. In human beings nervous symptoms are of only occasional occurrence and then of subordinate importance. They consist of headache, mental depression, pains in the limbs, disturbance of vision, dilatation of the pupils, difficulty in swallowing, and delirium. The visual disturbance, pupillary dilatation, and dysphagia are so infrequent as to suggest the possibility of mixed infection in those instances where such phenomena are seen.

It may be said that as a rule this organism and its toxin does not affect the nervous system.

Infection of food by this organism is practically exclusively confined to meat, whether freshly eaten or corned or smoked, or prepared as sausage, patés, or canned. It may, however, be transmitted by contact with the stools of an infected person.

Bacillus paratyphosus B. Also a frequent cause of disease in animals used for food, but apparently of much wider range than the preceding organism, this bacillus is much more likely to be disseminated by human carriers. Its toxin is not easily destroyed by heat.

Like the bacillus enteritidis the symptoms produced by this organism are predominantly gastro-intestinal. Cutaneous manifestations are frequent however. Thus various erythemata, urticaria, petechial hemorrhages or herpes may occur, and desquamation on the palms and soles has been observed. Albuminuria is often present.

Pupillary dilatation, photophobia, and delirium are occasionally seen, but otherwise the nervous system is not involved by this toxin.

The greatest variety of food products may be infected: meat, sausage, fish, ice cream, milk, cheese, puddings, etc. Both of the organisms just described have been found in milk.

Bacillus proteus: This organism occurs in food of any kind. It has even been found in oatmeal as the cause of poisoning. Its presence means contamination of the food from without. It is not associated therefore with the eating of food products from diseased animals. It will serve as the type of poisoning from allied putrefactive organisms.

In from 3 to 24 hours after the ingestion of such food gastro-intestinal symptoms of varying severity ensue, often associated with marked prostration and depression, pains in the neck and back, and less frequently convulsive phenomena. Prognosis good. Convalescence however may be prolonged on account of general weakness. The nervous phenomena are neither invariable nor especially peculiar to this type of food poisoning.

The toxin of the proteus group is destroyed by heat.

Colon bacillus: This organism is rather rarely responsible for food poisoning, although it is possible that it produces minor gastro-intestinal disturbances more often than we think.

The symptoms are purely gastro-intestinal. It produces no appreciable effect on the nervous system.

Its toxin is resistant to heat. The food in which it has been found the cause of poisoning is exclusively meat, especially when chopped, also liver, whether plain or in sausages, or patés.[15]

The hay bacillus (subtilis) is, rarely, responsible for similar symptoms, and one extensive epidemic is on record.

The putrefactive organisms are particularly likely to be found in chopped or minced meat, especially when its water-content is high, as is often the case when prepared by unscrupulous dealers. The poisoning is chiefly observed in summer, for obvious reasons.

Prognosis, as a rule, favorable. Nevertheless the eating of uncooked or smoked food infected with the proteus organism has caused death in not a few instances. It should again be emphasized that cooking destroys both the proteus and its toxin, being thus in sharp contrast to both the bacillus enteritidis and paratyphosus. Fortunately the putrefactive organisms usually, although not always, make their presence known by signs of decomposition in the food, but odor and flavor may be masked by the process of smoking and therefore pass unnoticed.

In the series of extraneous food poisons thus far considered we find some without effect on the nervous system, others with occasional but by no means invariable or especially characteristic nervous phenomena. Of the latter class there appear to be certain instances, of relatively rare occurrence, in which, either on account of unusual amounts of the toxin or through individual susceptibility on the part of the particular nervous system concerned, there has occurred nervous involvement of a more specialized character than customarily met with.

Thus in a few instances of food poisoning due to the bacillus enteritidis visual disturbance, pupillary dilatation and difficulty in swallowing have been noted, and pupillary dilatation and photophobia have occurred in paratyphoid poisoning. While these unusual symptoms in human victims may possibly be explained by a mixed infection, we nevertheless know from animal experiments that the pure toxin of the bacillus enteritidis, at least, is capable of causing palsies of the lower extremities. This has not occurred in the human being as far as I can learn.

We come now however to a class of extraneous food poisons that present such an invariable propensity to affect the nervous system that no question of individual susceptibility can be entertained, and we must assume for the toxin a specific affinity for nervous tissue.

Throughout the last century epidemics of food poisoning were observed and reported in which the predominant symptoms were indicative of a very pronounced involvement of the nervous system, while, in striking contrast to all other forms of food poisoning gastro-intestinal symptoms were entirely lacking, or, if present, were so subordinate as to be an almost negligible factor. Thus, after a period of from twenty-four to forty-eight hours following the ingestion of the food, the symptoms began with disturbance of vision and of accommodation; diplopia; ptosis; inhibition of salivation, and consequent dryness in mouth and throat; soon thereafter difficulty in speech, in swallowing, in breathing, and disturbance of cardiac action appeared, and usually, although not always, retention of urine and constipation.

There was no fever, no impairment of the sensorium, and no sensory symptoms. What is particularly striking is the absence of gastro-intestinal phenomena. Moreover the mortality was many times greater than in any other form of food poisoning, and death was clearly due to bulbar paralysis.

This picture of acute, rapidly progressive bulbar paralysis was sufficiently constant to indicate that in all of these cases the same toxin was at work, and that this toxin was a specific poison for nervous structure.

At first these epidemics appeared to occur only after the eating of sausages and hence were for a long time termed "sausage poisoning." In 1895 however an epidemic occurred at Ellezelles, Belgium, from the eating of pickled ham. The puzzling fact was noted that while two hams were pickled in the same keg, only the individuals who ate of the lower of the hams were poisoned. Moreover the rest of the hog, which had been in healthy condition, was eaten freely and safely by many people.

Investigation showed that the hams had been placed, one on top of the other, in brine, the bottom and poisonous one deeply immersed, the top and harmless one incompletely covered with the brine. Van Ermengem,[16] who investigated this epidemic, found in the lower ham a strictly anaerobic bacillus to which he gave the name of Botulinus.

This organism has since then been found in all cases presenting the characteristic symptom-complex above described, regardless of the particular variety of food concerned in the poisoning. The one essential requirement is that the food shall have been kept for a time excluded from oxygen, or nearly so.

Since Van Ermengem's discovery this type of food poisoning has been reported many times, and wherever searched for this particular anaerobic bacillus has been found to be the cause.

It is particularly likely to be found in poisoning from the eating of canned goods, whether meat, fish, or vegetables; in sausages, especially very thick varieties, tightly compressed in large thick gut; and in meat patés, thickly coated with fat; a large water-content particularly favoring its growth.

This organism is a saprophyte, not multiplying in living tissue, although it may gain access even to the internal organs. It is a large (4-9 μ long, 0.9-1.2 μ thick) slightly motile bacillus with rounded ends, and is Gram positive. It grows well in bouillon and in glucose agar, producing gas, its maximum growth occurring between 20° and 30° C. It forms oval spores, located near the end of the organism. The spores are of low resistance, being rendered inert by exposure to 80° C. for an hour.

Its morbid effects are produced solely by the toxin that it has already formed in the food before ingestion. Filtered cultures administered to animals produce the characteristic phenomena seen in the human victim and death is caused by respiratory paralysis. This toxin is of extreme virulence. As little as 0.0001 c. c. of a filtered culture produces symptoms of paralysis in monkeys, cats, rabbits, guinea-pigs and mice. In animals convulsive phenomena are sometimes seen. In pigeons ptosis, dilated unequal pupils, and paralysis of the wings were observed.

In the dead animals degeneration of the bulbar nuclei and anterior horn cells was found.[17]

In 1900 Roemer[18] reported another instance of ham poisoning caused by this organism. The ham, from a sound hog, had been put in brine;

from which after five weeks, bubbles of gas were seen to rise.

It has been definitely proven that this organism cannot develop in the presence of more than 6% of salt. Therefore in both of the instances here cited, the ordinary 10% brine could not have been used.

In 1904 in Darmstadt[19] twenty-one members of a cooking school became ill twenty-four to forty-eight hours after eating bean salad, and eleven of them died.

The symptoms were disturbances of vision, ptosis, various motor palsies, disturbance of respiration and cardiac action, and an entire absence of gastro-intestinal disturbance, fever, mental or sensory phenomena. Death was due to bulbar paralysis.

The string-beans, used in the salad, had been canned by one of the cooks at the school. On opening the can a rancid odor was noticed but as the beans seemed otherwise in good condition nothing was thought of it at the time. As they appeared very tender they were not cooked, but merely rinsed. Later on it was recalled, in the light of subsequent events, that the rancid odor was even more perceptible after the salad had stood for a while. A portion of the salad was allowed to cook for a while, by mistake. They who ate of this portion did not suffer, with the exception of one individual who ate of it while it was only slightly warm. She died.

The remains of the uncooked salad extracted with normal salt solution and passed through a Berkefeld filter was found highly toxic, 0.5 c. c. of this sterile filtrate, subcutaneously, killing mice in twenty-four hours with symptoms of general paralysis.

Bacteriological examination of the salad revealed an anaerobic bacillus identical with the bacillus botulinus. Its cultures, when incubated at 24° C., produced a toxin so powerful that it killed mice in doses as small as 0.000003 c. c., and guinea pigs in a dose of 0.0003 c. c. It is presumed that sterilization of the can, as practised at the cooking-school, was imperfect, for cooking destroys both the organism and its toxin. So characteristic are the symptoms caused by this toxin that it is easy to recognize its influence in instances where no bacteriological examination of the food has been made.

This is well illustrated by the cases reported by Sheppard in 1907. Three men on a camping trip ate some canned pork and beans. All became ill, eighteen hours later, with the characteristic symptoms of botulism, and all died from bulbar paralysis on the fourth day, without gastro-intestinal symptoms, without fever and with the sensorium clear to the end. The same mistiness of vision, diplopia, ptosis, difficulty in speech, swallowing and respiration were present in these cases as in all instances of botulism. The can of beans had been purchased four months previously and for a portion of this period had been kept in a warm place. The cases reported by Preobrashensky as ptomaine poisoning were in my opinion unquestionably instances of botulism. The extensive and intense involvement of the nervous system renders it of interest to cite these cases.

On the morning following the ingestion of the food, a young man noticed difficulty in swallowing and speaking. His friends noticed that his facial expression seemed vacant. He went to work however, and but little more was thought of it until the 5th day when his voice became nasal and fluids came out through his nose. On the 6th day he became more or less helpless; vertigo, diplopia, weakness of the external ocular muscles, especially on convergence, ptosis, diminished vision for near but not for distant objects, mask-like facies, weakness in protruding tongue, in swallowing, chewing, speaking and breathing, diminution of the sense of taste, extreme weakness of the cervical muscles, inability to support his head, to raise himself to sitting posture, inability to raise his arms, weakness of lesser degree in his legs, loss of deep reflexes, and diminution of the superficial reflexes were present in the following days, and he finally became unable to speak, to swallow, to chew, to cough, or to expectorate. The bowels were constipated. Fundi, hearing and smell were normal. No mental or sensory involvement.

His mother was similarly affected, the symptoms beginning on the 4th or 5th day. Both eventually recovered.

Van Ermengem believed the toxin to be of the same class as that produced by the bacillus of diphtheria and tetanus, namely a toxalbumen. The work of Brieger and Kempner[20] seems to confirm this opinion, as well as the successful production of an antitoxin by the latter author.[21]

Van Ermengem found degeneration in the nuclei of the motor oculi, the vagus and the hypoglossal. Marinesco[17] found marked and early degeneration in the spinal gray matter, especially of the anterior horns. These findings were confirmed by Kempner and Pollack,[22] who have made careful studies of the anterior horn cells in animal experiments with the toxin.

They found all degrees of degeneration,—sometimes cells in close proximity showed great contrasts, some in a state of advanced degeneration, others unaffected. Their examinations were unfortunately confined to the anterior horn cells. They found changes as early as twenty hours after the administration of the poison.

Kempner succeeded in immunizing a goat, whose serum protected animals inoculated with the toxin and showed curative power in animals previously inoculated. It was itself without injurious effect on the cells. An important fact, if true, is that he claims regeneration of partly degenerated cells as a result of this antixtoxin.

There are occasional instances in which one or more of the symptoms, so characteristic of botulism, crop out in a symptom-complex of which the dominant features are gastro-intestinal. Whether these, as seems probable, are always to be regarded as mixed infections or not, is still unsettled.

In this class, in my opinion, belong, among others, the cases reported by David[23] of herring poisoning and those by Fürst[24] of sardine poisoning.

It is not the province of this paper to deal with the accidental contamination of food by metallic poisons, so that I shall not consider instances such as the famous beer-poisoning epidemic of Manchester, Eng., or the now quite unknown instances of lead-poisoning from canned goods. More danger exists now perhaps from tin than from lead. It is important however to call attention to Lehmann's[25] warning of danger in the use of cheap glazed earthenware, especially when employed for the boiling of food containing vinegar or fruit acids. From 100 to 700 mg. of lead have been extracted from such ware at a single boiling.

Halenke[26] observed two instances of poisoning in women who had cooked cranberries in such a pot. From the stewed fruit they made a tart. Soon after eating part of the tart they became ill, one severely so. The glaze had been completely dissolved from the inside of the pot. A piece of the tart contained 160 mg. of lead. It was estimated that each woman had consumed from 400 to 600 mg. of lead malate, and that approximately 1000 mg. had been given off in this single boiling.

As this is a source of lead not likely to be thought of, it seems well to mention it here.

With these exceptions it may be stated that metallic poisoning from household utensils is extremely uncommon, and that danger from copper particularly does not exist. There is no doubt that many instances ascribed in the past to metallic poisoning were really due to bacteria and their toxins.

I now desire to record the following instances of food poisoning in which an unknown toxin manifested a conspicuously selective action on the nervous system.

A young woman, 26 years old, was brought to my office October 3d, 1914, by her family physician. The following history was obtained. She resided in a small town in Massachusetts, with her father, mother and sister.

On the 22d of the preceding July she and the other members of her family ate baked swordfish. This fish was purchased in apparently perfectly fresh condition, was placed in a refrigerator for about four hours, then baked and eaten at once. A few hours later she began to vomit and vomited for several days. During this time her tongue was heavily coated.

July 30th she felt much better. There was no diarrhoea at any time.

August 1st she drank some lamb-broth made the previous day from lamb purchased that day, the broth having been kept in the refrigerator twenty-four hours. She vomited soon afterwards.

August 12th, she began to experience weakness and numbness in the hands and feet, especially in the latter.

August 17th, she ate hamburg steak which caused no trouble. The balance was put in the refrigerator and eaten the next day.

Soon after, she began to vomit, and vomited for seven days. The weakness in upper and lower extremities steadily increased, as did the numbness in the legs below the knees.

August 29th she drank a half cup of freshly-made chicken broth, made from a chicken killed two days previously and kept in the refrigerator until the broth was made. She vomited at once, and this continued for an entire week. The refrigerator was then abandoned and no further gastric trouble occurred. The weakness progressed to paralysis in the legs and arms, especially in the extensors of the feet and hands.

On October 3d my examination showed complete extensor paralysis of hands and feet, with marked weakness of all of the other muscles, especially below the knees and elbows. The deep reflexes were all abolished. There was in the lower extremities pronounced diminution of all forms of sensation, increasing towards the distal portion of the limbs. The muscles below the knees and elbows were flabby and showed considerable atrophy. Beyond slight coldness in feet and hands vaso-motor symptoms were not present.

Cranial nerves and body muscles were not apparently involved.

The history of the rest of the family was then given by their physician.

The father of the girl, a farmer, Mr. A., age 66, ate considerable of the fish, apparently more than the others, and at the same time, at noon, July 22d. In the afternoon he felt nausea which continued several weeks. He did not vomit. There was no disturbance of the bowels.

August 12th he noticed prickling sensations in his feet and that he stumbled frequently in walking and had difficulty in regaining his balance, and when he tried to milk the cows he had not his customary strength in his hands.

During the next twelve days the weakness steadily increased until on August 24th he was unable to get out of bed, and two days later on, August 26th, he was completely helpless, unable to turn in the bed or to raise or turn his head on the pillow. Shortly before this he had noticed much difficulty in swallowing and when he took fluids they came out through his nose. On the 26th of August, before he realized his helplessness, he made an attempt to sit up and his heart action became so weak that he nearly lost consciousness. There was complete anorexia but no gastro-intestinal disturbance at any time, except persistent nausea. In contrast to his wife, he at no time has had any marked pain.

His wife, Mrs. A., a woman of 50, after eating some of the fish, was nauseated, and had a heavily coated tongue for several days and complete anorexia.

On the following day she felt weak and towards evening a slight diarrhoea ensued.

August 9th she felt prickling sensations in the hands and feet with weakness, and at the same time some difficulty in swallowing. Soon she experienced a great deal of pain in the legs.

Sept. 1st she became unable to walk or stand.

She had an attack of herpes zoster during this period.

She was not made ill by the lamb broth taken on Aug. 1st, but was made slightly ill by the second eating of the hamburg steak, after it had been in the refrigerator 24 hours; and also by the chicken broth eaten on Aug. 29th (see daughter's history).

Another daughter, a girl of 24, ate a little of the fish and vomited for several days.

Aug. 12th numbness and tingling of the feet began and lasted a week, during which she had an attack of herpes zoster.

Mrs. A's sister-in-law, about 50 years old, was at supper on the evening of the day the fish was eaten. Some of the fish, which had been in the refrigerator since noon was eaten by her and Mrs. A. The sister-in-law was ill with nausea, anorexia and diarrhoea for two weeks. B, a visitor for a day, ate on July 31st some of the lamb broth as soon as it was cooked, and suffered no inconvenience. This was the broth that on the following day, after having been in the refrigerator twenty-four hours, made Miss A. ill.

Aug. 18th, again a visitor at the house, he ate some of the hamburg steak after it had been twenty-four hours in the refrigerator. He vomited for five days. He was not present when the fish was eaten.

A friend who cleaned the refrigerator, after its use was abandoned, about Sept. 1st, was slightly ill with vomiting and slight numbness in the extremities.

In November, 1914, I visited this family. I found my patient, Miss A., greatly improved, but still with considerable weakness in the extensors of the feet and hands and still some sensory diminution. Last week the family physician wrote me that the weakness lasted five or six months, and that even now the feet and ankles are not quite as strong as before her illness, although he considers her as practically recovered.

I found Mr. A. in pitiable condition, almost helpless in bed, with complete extensor paralysis in the lower extremities, and marked weakness in all of the other muscle-groups. The upper extremities showed marked general weakness but especially in the extensors of the wrists and fingers where nearly, although not quite absolute paralysis was present. The grasps also were practically powerless. He was able to lift his head and turn somewhat in bed, although greatly handicapped by the inability to depend upon the aid of his limbs. The deep reflexes were all absent. There was the same diminution of sensation to all forms, in upper and lower extremities, increasing towards the distal portion of the extremities, with extreme blunting of sensation in hands and feet. There was marked atrophy in the legs below the knees, and moderate wasting in the hands. The posterior calf muscles showed considerable contracture, and there was moderate flexor contracture in the fingers and thumbs. His physician writes me that he showed very slow but constant improvement from this time on, and after a time was able to get about on crutches. These he was not able to discard until October, 1915, fourteen months after the onset of his illness.

At present when walking outdoors he occasionally uses one crutch. He can go up and down stairs by holding onto the banister; stands well, with no marked contractures, although thumbs are slightly adducted and the fingers somewhat flexed, and he can walk three or four hundred feet carrying a pail of water in each hand. There is still some loss of sensation in the finger-tips and feet. Knee jerks are still absent, and considerable atrophy exists in the quadriceps group. The muscle-groups below the knees have nearly returned to normal. I found Mrs. A. with great weakness in the legs and arms, especially in the extensor groups. The tendon reflexes were absent. A moderate degree of atrophy seemed present in the legs. Although she alone of all the family had suffered greatly from subjective pains in the legs, I was unable to find any diminution of sensation, and only slight tenderness over the nerve trunks in the legs.

The family physician writes that the condition lasted about five months in the upper extremities, and that there is now no perceptible weakness there; the lower extremities made a much slower recovery and she suffered much pain for months, but that at present there is no special weakness except in going up and down stairs, when there is some sense of weakness in the knees. The knee jerks are still absent. She has had no pain for many months.

At the time of my visit I found the second daughter practically without symptoms. She was the least ill of all the family.

These cases present several factors of interest. In the first place there can be no doubt that the fish was responsible for the illness of these people. When did it become poisonous and what was the nature of the poison? Swordfish is not known to contain any intrinsic poison at any time of the year. Did it possess its deleterious properties when purchased or did it acquire them between that time and the few hours before it was cooked and eaten. It was apparently in good condition when obtained. It was purchased in a small town, where presumably the rest of it was sold and where, so far as known, no other instances of similar illness occurred. It was kept in a refrigerator four hours, then baked and immediately eaten. From this refrigerator other food, placed therein after the fish-poisoning occurred, caused illness in several people, whereas the same food eaten before it had been in the refrigerator caused no illness whatever. Moreover the individual who cleaned the refrigerator, who was not a member of the family, and who did not partake of any of the food that made the others ill, was also slightly ill afterwards. This would seem to indicate that the icebox was infected and would indicate, as I think may be henceforward assumed, that a bacterial toxin was responsible for the illness. As it had been in constant use and no food taken therefrom had caused illness, until after the fish had been kept therein, it would seem that the fish must have been in some direct way responsible for the contamination of the refrigerator.

If so, it must have been to some extent infected when placed in the refrigerator. If so, why did it not make others ill, for it was but part of a large fish that must have been sold to other families in the same town.

There are perhaps three possible explanations of this:

First, the manner in which the fish was cooked.

Second, the conditions under which it was kept before being eaten.

Third, and closely connected with second hypothesis, the possibility that it was infected after it was purchased, and before it was put into the refrigerator.

First, as to the method of cooking: It is perhaps not generally known that baking or roasting is an extremely uncertain method of subjecting food to the action of heat, and that often the central portion of a mass of roasted meat has not been subjected to a sufficient degree of heat essentially to alter its character. It is quite within the bounds of possibility that even bacteria might survive in the central portion of baked or roasted meat, as it is often cooked, while many bacterial toxins are of a high degree of resistance to heat, and this is true of two, at least, of the organisms responsible for food poisoning,—paratyphoid and enteritidis. Baked fish is often insufficiently cooked. It may have been so in this case, and toxins, if not bacteria, may have survived the cooking.

Second, the manner in which the fish was kept after it was purchased, namely, in a refrigerator for four hours. It is not generally understood that bacterial growth, in suitable media, may be very active even at low degrees of temperature, as Pennington* has shown, while the high degree of moisture and deficient ventilation in the average refrigerator are highly favoring factors. Therefore there existed in this case the possibility that organisms, already present when the fish was purchased, may have developed subsequently sufficiently to produce a quantity of toxin adequate to cause the severe symptoms noted in this family, a toxin either highly resistant to heat, or in this instance insufficiently exposed to heat during the cooking of the fish.

As to the third hypothesis, that the fish may have been infected after it was purchased, it at least seems improbable that this could have been the case, for such infection would have been a surface contamination and therefore easily destroyed by the baking, even if the heat of the oven had not completely penetrated the piece of fish, while it does not seem probable that there had been time, during the four hours in the refrigerator, for bacteria from the surface, or their toxins, to have penetrated deeply into the meat.

It is a source of great regret that at the time the cases came under my observation it was too late to institute any investigation of the actual origin and character of the toxin responsible for these severe cases of polyneuritis.

I think that there is no doubt that a toxin was present in the fish in large amount at the ime it was eaten, for the gastric symptoms appeared within a few hours after it was consumed.

The appearance of the nervous phenomena occurred with striking uniformity twenty-one days after the onset of the gastric symptoms.

The phenomena presented by these cases do not correspond to any of the varieties of food poisoning described above under the classification of extraneous food poisons, that is, to any of the cases known to be due to organisms, whose identity has been revealed in late years by bacteriological research.

While I have cited but a few instances of epidemic food-poisoning, I have taken the symptomatology above given from a large number of epidemics and of individual cases reported, where the bacteriological identity of the exciting organism has been fully worked out. I have thus far found no instances among these that presented symptoms similar to those presented by this family, so that I am forced to conclude that such instances are not caused by any type of organism as yet demonstrated in food poisoning, although the organism itself may be of some known variety.

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SEMINAL VESICULITIS AND PROSTATITIS TREATED BY VESICULOTOMY AND PROSTATIC DRAINAGE.*

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DRAINAGE of the seminal vesicles for non-tubercular inflammatory lesions in these structures has been advocated by Dr. Eugene Fuller, since 1901, when he first published his technique and the results in a small group of cases. Since that time he has made many reports of groups of patients treated by vesiculotomy and has endeavored to create interest in the procedure, with but little success. Many members of the profession have been impressed by the striking results in patients that Dr. Fuller has shown before medical gatherings, but the technical difficulties of his operation, perhaps more than anything else, have been the reason of its not being more generally adopted. During the past few years the value of surgical drainage of the seminal vesicles has become more generally appreciated, due in large measure to the conviction that many disturbances, especially in joints, are due to focal infection from which infectious emboli or toxines gain entrance into the circulation and produce metastatic disturbances in other quite remote structures of the body by some peculiar selective action of the particular infection. The inter-relationship of small abscesses at the roots of teeth, pyorrhea, sinus suppuration and tonsillar infections to rheumatic manifestations is now generally acknowledged; and an explanation of most forms of chronic arthritis is usually sought for in some of the structures of the body which are prone to chronic infections.

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* Yearbook U. S. Department of Agriculture, 1907; and Jour. Biological Chemistry, 1908, Vol. iv, No. 1, p. 353.

* Read before the Chicago Medical Society, Dec. 20, 1916.

The enthusiasm resulting from this recent conception of focal infection resulting in metastatic disease is well founded, yet Fuller in 1904 recognized the relationship of focal infection in the seminal vesicles to gonorrhoeal arthritis and showed that surgical drainage of such foci resulted in a cure of the arthritis. The truth of Fuller's deductions in regard to this matter have been fully substantiated by the work of Squire, Schmidt, Young, E. O. Smith, White, Staley, and others. It becomes obvious that in searching for a focal infection which may explain a secondary arthritis, the seminal vesicles must enter into the differential diagnosis. While Fuller justly advocates seminal vesiculotomy in other than focal infections with metastatic manifestations it is with this group of patients that I have had the most experience, and it is because of the brilliant results obtained in this class that seminal vesiculotomy will most probably be more generally recognized as a valuable surgical procedure.

Fully to appreciate the nature of infection in the deep genital structures, the anatomy of the seminal vesicles and prostate and their relation to one another and to the deep urethra and rectum must be clear. With this in mind, it can be readily understood that a urethral infection which extends into the prostatic urethra, infecting the prostate through its minute opening into the prostatic urethra, or extending through the ejaculatory duct and entering the vesicles, may result in foci of infection which have, at best, small avenue of escape, and with inflammation in these small ducts the avenue may be entirely closed temporarily or permanently. While the structure of the prostate, made up of numerous small glandular tubules, differs somewhat from the seminal vesicles which are composed of convoluted and twisted tubes with diverticulae; the same difficulty in producing drainage of the retained products of inflammation pertains in each, and infections of these structures are characterized by multiple focal infections of extreme chronicity with or without acute exacerbations of systemic manifestations and local disturbances.

Infections of the prostate and seminal vesicles are usually simultaneous, and, while occasionally producing true abscesses in these structures, they are more often chronic from their inception.

Chronic infections of these structures are the most common causes of a persistent urethral discharge characterized by a small amount of purulent moisture at the meatus, especially in the morning, which persists for an indefinite period of time following the subsidence of the anterior infection. Acute exacerbations of active discharge occur, with lowered vitality from whatever cause, even after long periods of absence from any subjective or objective symptoms, which is a common evidence of the persistence of the focal infection in these complicated structures, and it is a question if a vesicle once infected may undergo a complete resolution, while the same is true, to a lesser degree, of focal infections of the prostate.

From these poorly drained foci septic material, either in the form of infectious emboli or toxines, may at any time escape into the circulation and lodge in various parts of the body, producing systemic manifestations either in the form of local disturbances in synovial membranes, the myocardium or meninges, or may result in a group of symptoms dependent upon a toxemia which produces mental derangement in the form of neurasthenia in its broadest sense. The infection within these organs and extending from them into the surrounding tissues results in local disturbances in the form of perineal pain and rectal irritation, possibly due to nerve block and disturbance of the lymph and blood circulation from fibrous tissue.

The inflammatory reaction within the vesicles, with essentially no avenue of escape, becomes distended with the infectious product, and, with the secretion of the organ, results in a distention of these tubular structures. Nature, in its attempt to incapsulate the infected structures by the usual connective tissue repair process, produces a perivesiculitis or thickening of the fascial structures overlying the infected organs whereby in time they are firmly bound to the bladder and rectum, which, together with the nerve block and disturbances in the circulation, may account for the rectal irritation and perineal pain. What is true of the vesicles is, in a degree, true of the prostate, yet the connective tissue elements normally abundant in the prostatic structure tend to incapsulate the foci within the organ and the result is commonly demonstrated as hard nodules in the gland by rectal palpation.

All attempts to eradicate the severe forms of infection of the seminal vesicles, and in some instances from the prostate, may be futile because of the extensive nature of the infection and the small channels through which drainage may take place, so that there remains a group of patients in which the surgical principles of drainage for retained inflammatory products must be employed if a cure is to result.

There is a group of patients that has come under my care with acute suppuration of the seminal vesicles, some with and some without abscess formation in the prostate. There have been some with an abscess in the prostate, vesicles, and one epididymis, all true abscesses, from which frank pus has been evacuated. Many of these patients presented the condition usually treated by local applications, hot rectal douches, rectal suppositories or other forms of sedatives, which, with the subsidence of the acute symptoms, lapse into the common picture of chronic seminal vesiculitis and prostatitis. In this group should be included patients admitted to the hospital with the diagnosis of ischio-rectal abscess, in which there was no rectal disease, but a recent urethral infection; the true condition being a rupture of the vesicle or prostatic abscess into the ischio-rectal fossa. Some of these cases showed no surface changes on the buttock, but rectal palpation reveals not only a swollen painful prostate, but a tender indurated mass through the lateral wall of the rectum above the prostate. While these cases have revealed an abscess of the prostate which had ruptured into the ischio-rectal fossa, there has been true suppuration within the vesicles as well. One patient had an abscess of many ounces originating in the right seminal vesicle, which burrowed upward above the pelvic brim, nothing appearing on the buttock surface, and the prostate at operation not showing abscess formation. The group just mentioned, resembling ischio-rectal abscess in most respects, and being mistaken for such, even in the presence of the history of a urethral infection, and opened and drained in the usual manner of treating ischio-rectal abscesses, have as a sequence, in some instances, a fistulous tract leading to the diseased vesicle, as proven by dissecting them to this structure.

I believe we shall come to realize that many so-called ischio-rectal abscesses are in reality ischio-prostatic or ischio-vesical abscesses and that we should take advantage of early drainage of suppurative seminal vesiculitis as we do with prostatic suppuration.

The *selection of cases* for seminal vesiculotomy, should, I think, include those who have any of the local or general manifestations dependent upon acute and chronic focal infections in these organs, which cannot be overcome by the usual non-operating methods of treatment.

The pathological classification consists solely of acute to chronic, non-tubercular, grades of inflammation of the genital tract, beginning with the prostatic urethra and including the structures therein, the prostate, vesicle, vas, or epididymis, with the predominating feature of the inflammation located in the seminal vesicles. It is the retention of the products of inflammation in the seminal vesicles, and in some degree in the prostate, that results in the clinical symptoms, both local and general.

The following clinical classification, which serves to select the cases suitable for operation, is based on the most important symptom or group of symptoms, but it is obvious that such a classification must be most arbitrary, as different groups of symptoms often exist together in some measure in many cases. The following classification is based on the most prominent subjective symptoms and the objective findings.

1. *Inflammatory Group:* (A) Acute suppuration, occurring most often in the vesicles and prostate in the course of acute urethritis, resulting in a febrile state and presenting locally, a swollen, tender prostate and distended, painful vesicles. The condition is generally treated by confinement to bed, local applications and drugs to relieve pain, with the result that after the acute process subsides there persists a urethral discharge from a sub-acute or chronic seminal vesiculitis and prostatitis, which lasts for weeks or months, even with appropriate local treatment.

(B) The chronic inflammation which has but a slight or no severe acute stage, characterized by an obstinate urethral discharge, proven not to originate from the anterior urethra and the material expressed from the vesicles and prostate by massage or coitus, showing fresh or old blood, and the products of inflammation in the gross and microscopical examinations. Cases of recurrent epididymitis associated with the condition just mentioned, and ejaculation of bloody semen point to chronic disease in the vesicles. While most of the cases of this group may be cured by appropriate non-operative treatment, there are others which cannot be sufficiently drained through the natural channels, and which must be subjected to operative drainage of the vesicles and prostate to effect a cure. There are cases of cystitis which can be explained in no other way than by the extension of the inflammation in the vesicles to the bladder wall and mucosa.

2. *Rheumatic Group:* Under this heading is included joint, tendon, muscle and bone lesions which may be dependent upon a focal infection. Gonorrhoeal seminal vesiculitis and prostatitis with metastatic lesions fall into the same class of focal infection as those arising from teeth abscesses, tonsillar infections or other poorly drained infective foci, from which other parts of the body become secondarily invaded by emboli or toxines entering the blood stream. In searching for the focus, which will explain a

so-called rheumatic manifestation, much differentiated study may be necessary in some cases; but in the differential diagnosis the condition of the prostate and seminal vesicles should be included.

3. *Pain group:* Under this heading is included those with persistent perineal pain, sometimes accentuated by defecation and often referred to the rectum; indefinite in character, but extremely disturbing to the individual, and often associated with neurasthenic symptoms, painful erections, without sexual stimulus, frequent nocturnal emissions, sometimes painful, and the semen bloody. This group usually gives a history of a previous urethritis, and in the absence of rectal or bladder disease, and the presence of palpable changes in the prostate and vesicles associated with abnormal elements in the fluid expressed from those organs; the cause of pain may be attributed to disease in these structures. Changes in the verumontanum may be associated with the changes in the prostate and vesicles, and occasionally treatment of this structure alone may relieve the distressing symptoms.

4. *Neurasthenic Group:* Under this heading is included those with but slight physical findings of disease in the vesicles already enumerated and mental symptoms in the nature of depression, melancholia and apprehension, associated especially with sexual features; the so-called sexual neurasthenia.

My operative experience includes 36 cases in the "inflammatory group," 67 in the "rheumatic group" and 8 in the "pain group." There has been no mortality. I have operated on no cases in the "neurasthenic group" but many of the patients falling under other headings had neurasthenic symptoms which improved or disappeared with the relief of their material symptoms.

The *pathological process* as observed at operation, excluding the suppurative invasion of the ischio-rectal fossa, has varied from early inflammatory stages, where the infection is almost entirely confined to the vesicles and prostate, to the late stages of the disease where there is marked chronic inflammatory infiltration of the tissue surrounding these structures, embedding these organs in a dense mass of scar tissue, obliterating the normal lines of cleavage between the rectum and the prostate and the base of the bladder, and so rendering the exposure of the vesicles most difficult and in two cases impossible. In the early stages of the disease, the prostate is found much swollen and boggy from congestion with blood and infiltration with lymph, and the vesicles distended, fluctuant organs, from the retained products of inflammation and secretion. When these structures have harbored infection over a long period of time, the tissues surrounding them, normally soft, are dense with induration and firmly adherent to the thickened walls of the vesicles and rectum, and the prostate capsule much thickened from infiltration by scar tissue. The organization of this plastic exudate surrounding the vesicles and prostate may produce contracture of the ureter, which passes under the upper portion of the vesicle, and extension of the inflammatory process may invade the bladder wall, producing a basal cystitis or trigonitis.

In many instances the infiltration of the fascial covering of the vesicles was found so intimately bound to the vesicles that it could not be separated from it and the vesicles exposed; so that the vesicles had to be opened through the thickened fascia without freeing it from the vesicle. In the majority of instances of the chronic type, a total removal of the vesicle could not have been accomplished with any degree of safety, while in the early acute type it might have been successfully performed. Dependent upon the vesiculitis, permanent changes in the periosteum of the os calcis in the form of small spurs or larger areas of thickening have been observed.

For the purpose of histological and bacteriological study pieces of the posterior surface of vesicles and bits of prostatic tissue have been removed and dropped immediately into Zenker's fluid, and cultures taken from the opened vesicle by swabs.

The *histological study* has been done in the Pathological Department of the Boston City Hospital, and I am indebted to Dr. F. B. Mallory and Dr. H. W. Cook for their interest in this work. It is important to note that pieces of a single vesicle may show normal tissue and acute and chronic inflammation; and that prostatic inflammation, in both the acute and chronic stages, has been found associated with inflammation in the vesicle. It is evident from this study that the whole vesicle is not always involved, and that the inflammation is usually confined to areas. Organisms have been sought for in the inflamed areas of vesicle and prostatic tissue, but there are no positive findings. There were questionable cocci in some sections, but they were so few and not without unquestionable features that they can be considered only suggestive.

Gram-negative organisms, especially cocci, are most difficult to recognize, in whatever tissue, unless abundant. In the future it is hoped to remove a number of vesicles unopened, that a more thorough study may be made.

The pathological picture in an acute case with frank pus in the vesicles, shows (S-16-1549) the mucosa lining the tubules to be intensely congested and the muscularis generously infiltrated with polymorphonuclear leucocytes, which are also found abundant in the lumen of the vesicle tubules. The epithelial cells lining the lumina are swollen, and fibroblasts in the deeper layers are also swollen, and in an active condition, showing rare mitotic figures.

The following description is from a specimen showing normal, acute and chronic inflammatory areas. Only the pathological areas are described:

S-16-1515. The vessels of the mucosa are distended with blood. In the tunica propria are many polymorphonuclear leucocytes which can be traced well into the muscularis, though in diminishing numbers. Small irregular collections of leucocytes occur in the deeper layers and a few eosinophiles are seen. There is nowhere any definite increase in connective tissue. In the lumen are desquamated epithelial cells, polymorphonuclear leucocytes and granular debris.

The following description is from a specimen showing chronic inflammation:

S-16-1593. The normal architecture of the mucosa is lost, it being represented only by comparatively large spaces partly lined by swollen, flattened epithelial cells. These spaces contain polymorphonuclear and endothelial leucocytes. The tunica propria and muscularis are densely infiltrated with similar lymphocytes, plasma cells, and eosinophiles. There is little, if any, new formed connective tissue, although the fibroblasts are swollen and active.

The following description is from a specimen in which the vesicle tissue appeared normal and the prostatic tissue showed acute and chronic inflammation:

S-16-1899. *Seminal Vesicles.* Negative excepting for the occurrence of cyst-like cavities in the mucosa which are filled with a colloid material. *Prostate:* There is an occasional gland acinus which contains an exudate consisting of polymorphonuclear and endothelial leucocytes. A few indefinitely circumscribed foci of lymphocytes occur between the glands. Several eosinophiles are intermingled with the lymphocytes. Many of the glands contain corpora amylocea wholly or in part enveloped by foreign body giant cells.

This patient had suffered from gonorrheal arthritis for many years and at the time of operation had an enormously swollen ankle, of weeks' duration, which became normal in all respects in 48 hours, and while the piece of vesicle tissue examined was normal, foci of inflammation no doubt existed in the vesicles.

The *material contained within the vesicles* has varied much in amount and character. In some the material has been small, in which instances the tubular structure has been observed as wide open, with thickened walls and a content quite fluid, and but slightly cloudy. In some acute suppurative cases there has been frank pus, but in most, the material has been sero-gelatinous and opaque. In a few instances amalacious bodies have been found.

Cultures and smears of the material found in the vesicles at the time of operation has shown no growth of the gonococcus on litmus, milk, hydrocele and blood agar, with the exception of the gonococcus, which has been found in smears in some, but not all, of the early suppurative cases.

The apparent absence of the gonococcus is not clearly understood, as this organism must be the original one producing the infection. It is generally appreciated that the gonococcus is not a virulent organism, and that its growth on culture medium is difficult, which may, in a measure, offer a sufficient explanation. These observations, however, in regard to the seminal vesicles are exactly those in chronic gonorrhoeal tubes in the female.

Secondary infections with pyogenic organisms, as mentioned by Fuller and by Squire, have not been found in my cases. It has been suggested that cultures be made by planting pieces of the vesicle on Rosenow's media, which will be done in future cases.

It is not easy, at first glance, to correlate the negative bacteriological and histological findings with a brilliant clinical result, yet there are many cases in the rheumatic group in which large painful joints have become normal within 48 hours, with entire absence of symptoms. In fact, these cases have behaved in exactly the same way as those where the histological picture of chronic inflammation was present. It may be, of course, that the particular piece of the vesicle removed for study was not diseased, which is most likely the correct explanation, as both acute and chronic inflammation was found in certain specimens, while other sections of the same vesicle were perfectly normal. Some of the cases showing a negative histology in the vesicle tissue have shown acute, and sub-acute and chronic inflammation in pieces of the prostatic tissue removed; yet this was not always the case, and in some the prostatic tissue as well as the vesicle tissue appeared normal. It does not seem that the simple splitting of the prostatic capsule with removal of a section of each lateral lobe, and multiple incisions into the remaining tissue without further drainage of it, could sufficiently destroy foci in the prostate tissue, and bring about the remarkable clinical change. The histological findings in the prostatic tissue is, however, an argument in favor of adding even this inadequate drainage to the prostate at the time of drainage of the vesicles.

Results: In the "Inflammatory Group" there are 36 cases. Fourteen of them were of the acute variety, three having suppuration in the prostate as well, and two, besides showing pus in the vesicles and prostate, had a unilateral suppurative epididymitis. There were four other cases in which rupture of the vesicle or prostatic suppuration had invaded the ischiorectal fossa. There were five cases in which the suppuration was confined to the vesicles.

Twelve of these fourteen cases can be considered cured, and all showed the immediate improvement, incident to the evacuation of pus from whichever source. With the establishment of drainage, pain was relieved, the temperature and leucocytes dropped; and it remained only to care for the infection in the urinary tract. The course of these cases following suppuration in the vesicles and prostate, leads to the feeling that if such infection in these structures would go on to suppuration whereby all the foci of infection became confluent, that a more rapid cure may be expected. Those cases in which the suppuration was in the vesicles alone proved the hardest to cure, as the remaining foci of infection present in the prostate required further treatment and in two patients the prostate has continued to give some evidence of chronic infection.

Twenty-two of the thirty-six cases in the *inflammatory group* were of the *chronic variety*, having received local treatment over periods of months or years, the process being relatively quiescent at times, to be followed by acute exacerbations without known cause, or from obvious lowering of the local or general resistance. Vaccines which were employed in some of the cases proved of little or no value. The cases forming this group were subjected to operation only after it was evident that the inflammatory lesions could not be drained through the natural channels.

There were four patients in this group who had sinuses following a rupture of a suppurative vesiculitis or prostatitis, each giving a history of having had an abscess presenting on the buttock which was incised. In two of these the sinus led to a vesicle in one side and in the other two it could not be determined that the sinus did not originate from the prostate. Each of these cases, however, had evidence of both vesiculitis and prostatitis.

Sixteen cases in this group required but little local treatment following operation to effect a cure, four were greatly improved, but still had slight evidence of a prostatitis, and two were little better than before the operation.

In the *rheumatic group* there were 67 cases. Many of these patients had been invalids, periodically, for many years. Some had non-articular affections, while others had multiple joints and tendon affections. Seven had so-called spurs of varying types on the under surface of the os calcis, and when present were always bilateral. Most of the cases had received nearly all known forms of treatment with varying benefit, but none had been cured. Accompanying urethral discharge, either acute or chronic, was the rule; and many who had been relatively free from rheumatic manifestations had a return of severe rheumatic symptoms following a new infection.

Drainage of the vesicles and prostate in this group has given the most striking results and this procedure has changed what was a most hopeless condition into one of the most satisfactory and brilliant surgical triumphs. Pain has disappeared from affected joints, following the ether recovery, and even large swollen joints have become normal in appearance within 24 hours to 48 hours following operation. While the explanation of this phenomenon may be wanting, the fact remains. All but one of the patients in this group may be considered cured so far as the rheumatic features are concerned, and there have been no recurrences of the arthritis. Of the 67 cases in this group 52 were cured of discharge and 12 improved by appropriate treatment, subsequent to operation. In three the discharge was little changed. About half of the patients received gonococcus vaccine for varying periods following operation, but those who did not receive it fared quite as well.

The one case in this group unimproved presented such difficulties in the operation, from fibrous infiltration about the vesicles, that the vesicles were not exposed or drained. This patient had been a helpless invalid for years; nearly every joint in the body being involved, and he was unable to move or even feed himself. Although the vesicles were not drained in the operation there was a temporary improvement, especially in the swellings of the knees and in regard to pain, but he soon relapsed into his former state.

In the *pain group* there are eight cases. This group is the most unsatisfactory in regard to the results. The symptoms have been indefinite in character, associated with neurasthenic features. All means of alleviating the symptoms were employed before operation. Transitory improvement by different forms of treatment were not encouraging. All of the cases had evidence of chronic vesiculitis. Five of the eight had a discharge, and one had been proven sterile. In this case I had done a bilateral anastomosis of the vas deferens with the retre-testis three years previous to the operation on the vesicles. In this case, as in all others of this class, there was an unusual amount of fibrous infiltration about the prostate and vesicles which, I believe, accounted for the pain. Four of the cases may be considered cured, three improved, and the case in which the operation for sterility was performed, unimproved. In this case there had been an injury, years ago, to the sacrum, requiring the removal of the coccyx and the two lower segments of the sacrum. The tissues were so infiltrated by fibrous tissues that the rectum was torn, early in the operation, and the vesicles could not be exposed. All of the patients who had discharge were relieved of this feature, and all but one relieved of pain. Neurasthenic symptoms ceased in but half of the cases. On the whole, this group of cases has been the most unsatisfactory of all.

Complications attending the operation are: the opening of the rectum, post-operative hemorrhage, and epididymitis. I have opened the rectum four times. In each instance it was immediately repaired. In one the repair was permanent. In one the repair broke down and the fistulous tract was treated as an anal fistula with a satisfactory result. One had a fistula which has healed, opened and again healed. The remaining case is recent and presents every indication of being a permanent repair. There has been one case of post-operative hemorrhage, which was controlled by pressure without opening and packing the wound. There have been several cases of epididymitis, only, however, when the scrotum has not been supported. None of the cases of epididymitis have suppurated and have been mild in character.

Following is a table of results:

TABLE OF RESULTS.

TOTAL NUMBER OF CASES OPERATED, 111.

1. "*Inflammatory Group*"	36	cases
A. Acute inflammation	14	"
(a) Associated with prostatic suppuration	3	"
(b) Associated with prostatic suppuration and unilateral epididymitis	2	"
(c) Associated with rupture into ischio-rectal fossa	4	"
(d) Suppuration in both vesicles only	5	"
Cured	12	cases
Improved	2	"
B. Chronic inflammation	22	cases
(a) With a persistent sinus following rupture	4	"
Cured	16	cases
Improved	4	"
Unimproved	2	"
2. "*Rheumatic Group*"	67	cases
(a) With periosteal changes on both os calcis	7	"
Cured (as regards rheumatic symptoms)	66	cases
Unimproved (as regards rheumatic symptoms)	1	case
Cured (as regards discharge)	52	cases
Improved (as regards discharge)	12	cases
Unimproved (as regards discharge)	3	"
3. "*Pain Group*"	8	cases
Cured	4	cases
Improved	3	"
Unimproved	1	"

Technique: Patient in exaggerated perineal position. An inverted x-shaped skin incision follows the bony arch of the pelvis, the apex in front and the lateral incisions extending backward to the tuberosities of the ischium. The skin flap so outlined and including fat is dissected from the underlying structures, exposing the bulb of the urethra, and the perineal tendon. The fossa on either side of the medial tendon is opened as deep as possible by blunt dissection with the index finger, identifying the apex and the posterior surface of the prostate and freeing the rectum from it, as much as possible. The median tendon and recto-urethralis muscles, which attach the rectum to the urethra, are divided as near the bulb of the urethra as possible. With division of these recto-urethral attachments the muscular fibers of the levator ani fibers may be seen attached to the posterior surface of the prostate. A cotton glove on the right hand aids the freeing of these fibers, by blunt dissection, from the posterior, and partly from the lateral, surface of the prostate. This blunt dissection is carried beyond the junction of the prostate with the bladder, exposing the vesicle area and the base of the bladder. The rectum is protected by a piece of gauze placed to the bottom of the wound and a flat retractor either 1½ or 2 inches in width, according to the width of the bony pelvis, and with an abrupt curve and long enough to reach the bottom of the wound, is inserted. This special retractor is furnished with a weight so that it is self-retracting. The posterior surface of the prostate and bladder are now visible. A special double tenaculum is inserted into the prostate tissue just below its junction with the bladder. By lifting the prostate with this instrument the base of the bladder and the vesicle area comes clearly into view. The outline of the vesicle may be visible beneath the fascia of Desnonvillier, provided this fascia is not much thickened by inflammatory infiltration. Even when not visible the sulcus in the median line, between the vesicles, may often be palpated which, however, is not necessary if the dissection is carried well above the superior border of the prostate. The fascia in the vesicle area, on first one side and then the other, is picked up and divided and should be so freed as to allow the vesicle to be picked up with forceps and drawn out through the fascial incision. The fascia varies greatly in thickness, being normally as thick as writing paper, may be nearly one-quarter of an inch thick when involved in extensive peri-vesiculitis. While there is usually a line of cleavage between the fascia and the vesicle, they may be so bound together that the vesicle must be opened without freeing the fascia from it. The vesicle being exposed, it is opened by multiple incisions or better by cutting away portions of the posterior wall and thus giving it freer drainage. If the ampulla of the vas is dilated it also should be incised. With the vesicle well opened its interior is swabbed with crude carbolic acid, followed by alcohol. Small rubber drainage tubes are caught in its structure by a No. 1 plain catgut suture. The prostate tenaculum is removed and the prostatic capsule freely incised over each lateral lobe, a section removed and several incisions made into the prostate tissue, as it is believed that infection lurks therein to some degree in nearly, if not all, instances of seminal vesicle infection. The retractor and gauze protecting the rectum is removed and the rectum inspected to be sure that it has not been opened. The divided muscles are united by catgut, taking pains to pick up the fibers of the levator ani muscles.

After the divided muscles and the median tendon have been united, the skin-flap is replaced and the wound closed by interrupted silkworm gut sutures, and the drainage tubes, sutured into the vesicles, protruding from either angle of the wound. A rectal plug four inches long, composed of rubber tubing surrounded by iodoform gauze, is inserted into the rectum and held by suture to the anal margin. In this way the rectum is made to occupy its normal position and close the space above the muscular repair. By filling the space by this method, oozing is less apt to result in an accumulation, and the rectum being held open by the tube, allows the escape of gas during the period that the bowels are confined.

A scrotal dressing which holds the testicles well elevated is applied to prevent the possibility of epididymitis, which is prone to occur. A dry dressing is applied and held in position by a "T" bandage.

After-care: consists in keeping the patient on a light diet, the administration of pill opii, grains one, morning and night for five days in order that no movement from the bowels may occur. On the sixth day the pill opii is omitted, the rectal plug removed and an oil enema of two ounces is injected into the rectum through a long-nosed syringe and a dose of castor oil administered. The patient is then placed on a more substantial diet. One or more corrosive dressings are applied to the wound daily and the drainage tubes are allowed to remain from ten to fourteen days. Earlier removal of these tubes may prevent sufficient drainage and result in the recurrence of symptoms. The areas occupied by the tubes usually heal in from three to five days following their removal. A suspensory bandage should be worn for a period of at least one month. Any evidence of prostatitis or anterior urethritis should receive appropriate local treatment.

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FEEBLE-MINDEDNESS AS SEEN IN COURT.

BY V. V. ANDERSON, M.D., M.A., BOSTON,

Medical Director, Municipal Court.

THE feeble-minded possibly form the most important single group of which our courts need to take cognizance. They furnish a substantial nucleus to that most expensive body of individuals who clog the machinery of justice, who spend their lives in and out of penal institutions and furnish data for the astonishing facts of recidivisim; facts which have served to awaken our social conscience to the need of more adequate treatment under the law for repeated offenders.

Now the duty of criminal law is the protection of society from anti-social acts; and in this capacity the court stands as one of the greatest bulwarks of society in insuring social welfare. Thousands of individuals are yearly arraigned, charged with various offenses, who are deterred from further anti-social conduct, who profit well by the lessons learned from arrest and detention, or judicial reprimand, or short-term sentences, or probationary treatment. Particularly the latter, for probation under modern scientific methods is literally working wonders, doing things which years ago were scarcely breathed of. As one prominent prison official has put it, "probation is fast breaking down prison walls." But then there remains a very well-defined group, who do not profit by the usual methods, who fail to respond properly to any form of treatment, who on being released from prison very quickly find themselves again in court; who, when placed on probation, are usually surrendered, if not from the first placed on inside probation—that is, within homes and institutions not penal in character—who seem totally unable to adapt themselves to society's laws and customs, and thus are arrested over and over and over again.

A study of this class indicates that feeble-mindedness stands as a causative factor in from 25% to 40% of cases. In going over a group of one thousand offenders, individuals who were difficult problems and selected by the court and probation officer as needing mental examinations, I found 36% feeble-minded. Let this not be understood as representing the per cent. of feeble-mindedness among offenders in general. This study, like other studies coming from penal institutions, was made on a selected group. Under our present system all those believed capable of reformation under probation are given the opportunity.

In consequence we find a much larger percentage of dull and incapable individuals sent to penal institutions than those placed on probation, and as a matter of course a larger percentage of feeble-mindedness is to be expected. Such studies are to be interpreted as showing conditions that exist among the group investigated only.

If 25% or 35% or 40% of selected and difficult problems among repeated offenders in court or among inmates of penal institutions are found feeble-minded, one does not mean that 25% or 35% or 40% of all offenders are feeble-minded; or that such a percentage of crime is to be explained on the basis of feeble-mindedness.

The fact is that the most reliable work done indicates that not more than 10% of offenders in general are feeble-minded; but this 10% give almost as much trouble as all the rest put together. It is this 10% that form the very backbone to recidivism whose treatment has been so unintelligent, so expensive, and so futile. All because society has yet to recognize their needs.

It is with the idea of telling you about these feeble-minded people, as one sees them in court, that I have come here this evening. The case histories of one hundred feeble-minded individuals were taken from the files and here are some of the data they contain:

All showed sufficient deviation in childhood to have warranted an early recognition of their condition, and the institution of proper remedial measures to prevent careers that could with reasonable certainty have been predicted. The following table indicates their ability to profit by the training afforded them in the public schools—bearing in mind that the majority of these individuals started to school at the usual age and quit at 14, 15 and 16 years.

Table Representing Grade Reached in School.

Primary	4%
First Grade, Grammar	11%
Second Grade, Grammar	4%
Third Grade, Grammar	12%
Fourth Grade, Grammar	14%
Fifth Grade, Grammar	23%
Sixth Grade, Grammar	11%
Seventh Grade, Grammar	9%
Eighth Grade, Grammar	7%
Data not obtained	3%
No schooling at all	2%
Total	100%

Twenty-seven per cent. were able to get beyond the fifth grade, whether by their own efforts or whether forced up from year to year, in order to get rid of them, I do not know. However, these figures will bear carrying in mind in connection with some tables that are to follow. Sixty-eight per cent. of our cases were never able to get further than the fifth grade and showed by the poor character of school work their unfitness for the training society demanded of its future citizens, giving early promise of that mental handicap which later on demonstrated itself in an inability to compete on equal terms with their fellows in the more strenuous struggles of life. Recognized as failures in that institution which is supposed to train men for life's battles, these unfortunates are set adrift in early adolescence to earn a livelihood. The following table will show just how well this was accomplished.

Table of Economic Efficiency.

Regularly employed	4%
Irregularly employed	21%
Odd jobs	28%
Work at home	13%
Do not work at all	34%
	100%

Seventy-five per cent. are not self-supporting. Twenty-five per cent. could be considered as definitely self-supporting. Is it any wonder that, being so economically unstable, they drift aimlessly through life, falling into the hands of charitable organizations, criminal courts, penal institutions, almshouses, and such!

And this is not all, for not only are they incapable of measuring up to the economic standards set by their normal fellows, but likewise are they unable to appreciate their obligations to the order of society; and, consequently, fail to obey its mandates. And so they come before the bar of justice. Now that same lack of learning capacity, that same inability to profit by mistakes as demonstrated so forcibly in their failure to advance in school, and later to earn a livelihood, again crops out in their inability to profit by the usual treatment meted out to offenders in court. If put on probation, they have to be surrendered, or placed on inside probation in the House of the Good Shepherd, the Welcome House, and such. If sent to prison, on being released they soon again appear in court to reënact the same process over and over.

The following table of arrests will give some idea of the frequency with which the machinery of the court is called into use for handling these individuals. Bear in mind that all of these records are recent ones and that most of the individuals had old record cards which were not gone into, these sufficing very well for the purpose in hand.

Table of Arrests.

Drunkenness	1436	arrests
Chastity	163	"
Larceny	45	"
Assault and Battery	11	"
Surrendered	150	times
Vagrancy	4	arrests
Carrying Revolver	1	"
Breaking Glass	3	"
Profanity	2	"
Common Brawler	1	"
Possession of Drugs	8	"
Stubborn Child	1	"
Totalling	1825	

This averages 18.25 arrests apiece. The futility of any method of treatment is demonstrated by their apparent inability to profit by what is done for them and the unfailing certainty with which they return to be handled over again.

No matter what is tried, the effect seems to be the same. If released by the probation officer, soon they are back again. If brought to court, reprimanded by the judge, and their case put on file, soon they will appear in court again. If put on probation, their chances of completing it successfully are so small as to be almost negligible. If sent to prison, they are again locked up within a short while after being released. The two following tables will indicate some of the methods of treatment tried by the court:

Table of Probation.

No. of Times Placed on Probation	Average	No. of Times Surrendered	Average	No. of Times on Inside Probation	Average
423	4.32	220	2.20	118	1.18

These one hundred feeble-minded individuals were placed on probation 432 times, one hundred and eighteen of these were what is known as inside probation; that is they were put within the House of the Good Shepherd or the Welcome House for the entire period of their probation one hundred eighteen times.

Three hundred fourteen times they were tried on outside probation, secured employment, given every chance to make good, and helped wherever possible, but had to be surrendered two hundred and twenty times. In short, out of the four hundred thirty-two probationary periods, they did not quite average one successful probation apiece.

Considering these one hundred cases, the chances were better than four to one against their being able to conduct themselves normally for a six months' probationary period.

The court also tried penal treatment in these cases, as the following table will show:

Table of Penal Treatment.

No. of Sentences	Average Each	Length of Time Sentenced	Average Each	No. of Indeterminate Sentences	Average Each
735	7.35	106 yrs.	1 yr. +	250	2½

Seven hundred and thirty-five sentences were imposed, or 7.35 each, amounting in fixed time to 106 years, not including 250 indeterminate sentences, such as State Farm and the Reformatory for Women, where the time to be served is not fixed, amounting to periods of several months, more or less, to each sentence. Now this is not the worst of it all. These same individuals continue piling up records and a veritable vicious circle is created.

Finally as an adequate explanation of all this social mal-adjustment, incapacity in school, inability to earn a livelihood, lack of appreciation of their obligations to the order of society, and incapacity for understanding and measuring up to the social standards of fully grown men and women, the following table is most significant:

Table of Mental Level.

Between	7	and	8	years	4%
Between	8	and	9	years	30%
Between	9	and	10	years	41%
Between	10	and	11	years	25%
					100%

Though all were adult in years and physical development, 75% had the mental level of children below ten years. Now this, taken in connection with the fact that 75% were not self-supporting and 73% never got further than the fifth grade in school, gives us a group consisting of about three-fourths of our cases which, it seems, would have been more profitable for society to have recognized years ago and to have saved all this economic waste, protecting itself—as well as these individuals—from their own weaknesses, making them happy and useful in a limited environment created for their special needs. By failing to do so the mental arrest from which they suffered has become so firmly fixed that all possible chance for improvement is lost; for there was a time when a chance existed in each and every one of these cases for some advance along the lines of proper habit training.

But, even as it is now, it is worth more to society—as it is clearly more economical and undoubtedly more humane—to provide proper hospital and other treatment suited to the needs of these individuals than to go on locking them up in jails and turning them out again; and then locking them up and turning them out again; and repeating the process over and over.

By failing to interpret correctly the condition of these weaker members, society has acted irrationally—to say nothing of the humanity side of the question. Because of society's failure to provide proper facilities to care for these individuals, our courts must go on committing to penal institutions offenders whose central nervous systems are so conspicuously undeveloped as not to be capable of adapting themselves to the conditions of normal life.

Industrial Health Insurance.

THE PROPOSED HEALTH INSURANCE LEGISLATION.*

By Francis W. Anthony, M.D., Haverhill, Mass.

In the plan of proposed health insurance legislation the main ideas are these: That every person employed in the Commonwealth, except those receiving regular wages in excess of $100 per month, shall be compelled to be insured. There are some exceptions, including casual employees. There is some provision made for voluntary insurance. Under the benefits of this act come medical, surgical, and nursing supplies, sickness benefit to the insured person or the dependent members of his family, maternity benefits, funeral benefits, and the same medical aid for dependent members of the family.

Complicated arrangements are made by which local societies, called "funds," take charge of the work in a given locality, and existing fraternal orders and societies and benefit organizations can be utilized, under certain restrictions. Employers, also under certain restrictions, may organize funds. A panel of physicians attend to this work, the sick person having freedom of choice as to the physician he wishes, provided this physician is doing insurance work.

There are many provisions for arbitration, the settling of disputes, the division into districts, the establishment of a medical advisory board, the qualifications required for societies to be approved, the power of the commissioners, and the thousand and one details that must make a complicated scheme of this nature.

The subject of industrial health legislation is one of the largest that has been presented at any time to the citizens of Massachusetts for their consideration. Perhaps before I proceed to discuss it, I should, as they say in court, qualify myself. I do not stand forth as an authority; it simply chances that certain opportunities have been open to me for observation, which opportunities I have taken advantage of to the best of my ability.

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* Read before the Berkshire County District Medical Society, February 8, 1917; reprinted from the *Haverhill Gazette*.

I have been for many years a member of the medical committee advisory to the accident board, helping to frame the medical principles by the acceptance of which the accident board outlined its medical policy. I am a member of the committee appointed by the council of the Massachusetts Medical Society to get in touch with the question of industrial health legislation and with the recess committee appointed for its consideration, our duties in that respect being neither to advocate nor to oppose the measure, but rather to see, as far as it was in our power to see, that, if such legislation was presented, it included such provisions as might not be to the disadvantage both of the physician and of the sick person benefited by the act.

I have also been, since its inception, the president of the Associated Charities in Haverhill, a city of 50,000 inhabitants, with the usual amount of dependency, and for nearly 29 years I have enjoyed in that vicinity a practice that has taken me among both the rich and the poor, with work in and out of the hospitals. I am also now a trustee of the Bridgewater State Farm and the Tewksbury State Infirmary, a member of the corporation of the Waverley School for Feeble-minded and a director of the Massachusetts Society for Mental Hygiene, as well as President of the Massachusetts Society of Examining Physicians and Surgeons. In the carrying out of these varied duties I have been able to look upon this subject from different viewpoints. But I speak today as an individual simply, and what I say may or may not represent the views of my associates.

The principle of the proposed act is that it is an extension of the principles carried out in the industrial accident legislation, namely, that it is for the economic advantage of the employer and the state, as well as of the employee, that the conditions pertaining to health be made as nearly perfect as possible in order that there may be less dependency and larger economic value in work, and a better preparation for time of emergency and old age.

Those who are proponents of the measure claim that the need for such legislation is shown by surveys that have been taken in several localities, which, to some minds, have demonstrated the fact that a large amount of sickness is not properly treated; that there is not sufficient preventive work done; that many work when unable to work and return to work before they are well, driven by the force of absolute need and want.

Their claim is that an individual working by himself can accomplish nothing, and that the only hope of this economic gain is through community work and legislation which will grant the benefit proposed and lay upon the community the burden of expense, the general plan outlined being that two-fifths of the expense shall be borne by the employee, two-fifths by the employer, and one-fifth by the state.

The benefits proposed cover not only the workingman himself, but the members of his family as well, and in most of the plans proposed, include funeral benefits and maternity benefits, while some plans add old-age pensions and non-employment insurance. Those who favor the plan point to the work as done in other countries, notably in Germany, and particularly in Leipzig, as illustrating what can be accomplished, and they point also to the fact that the measure has spread over Russia, Germany, Austria-Hungary, England, and some other nationalities. They claim that it is not only a matter of economy but a matter of humanity as well to aid the less fortunate individuals in the community.

The opponents, on the other hand, say that even admitting a bad condition to exist, in a measure that is "a question of A meeting together with B and deciding what C shall do for the interest of D." They state that the economic value to the employer is greatly exaggerated, and call attention to what they claim to be a fact—that the additional accounting and book-keeping in the state of Massachusetts would alone cost the employers of that Commonwealth one million dollars a year for the additional work involved.

They ask us to note the countries that have taken up the work, and point out the fact that they are countries that are monarchies or monarchistic in government, that the project is an offspring of Russia, developed and brought up to maturity in Germany and later given part of its education in England, but that it is unadapted to the democratic form of government of America. They maintain that it is practically Socialism, or at least communism, in contrast with individualism, which they hold has been what has given America its growth up to the present time. They point out the fact that at the present time no state in the Union has adopted the measure, and ask why Massachusetts should be the "goat" upon which it is to be first tried. They also note that the increased cost in this measure must be ultimately laid upon the consumer because the employer would at once add his two-fifths of the cost to the cost of production.

It is unreasonable to suppose that if the employee is unable—absolutely unable, as the proponents say—now to pay the cost of sickness, he would then be able to meet the two-fifths cost imposed as a burden upon him, and would, therefore, demand a raise of wages to cover this, again forcing the employer to lay this as an added cost upon production, while the one-fifth paid by the state would, of course, be borne by an increased tax rate, the taxpayer and the consumer ultimately paying the whole bill. The reply by the proponents is "that is exactly the intent of the measure and, if the measure is wise, that is the fairest way to meet the financial needs." The opponents also call attention to the fact that this measure does not care for several other classes, that it does not provide for the casual workers nor several other classes, that it does not provide for the invalid, and that invalid pensions, old-age pensions and non-employment pensions will follow.

Organized labor has made as yet, so far as I know, no absolute statement of its position. One of its leaders has publicly stated that it is in a receptive mood and wishes to know more about the subject before it comes to a decision. This gentleman calls attention to the alleged fact that there are in Massachusetts over ten thousand workers earning $540 a year or less, and says, "give us a living wage and we will take care of ourselves." Mr. Abrams said in Boston last week, "Organized labor would like health insurance, but will not pay one cent toward its cost." The medical profession has, by the body representing its largest society, taken no vote for or against the measure, the only vote on record being one of the council of the Massachusetts Medical Society, that "owing to the magnitude of the question, the recess committee be requested not to present a bill the present year, thus giving an opportunity for the citizens of the Commonwealth to become more conversant with the subject."

From my acquaintance with the statistics of the organized charity work of the State, I am aware that when we consider the causes of dependency, sickness represents about 28%, nonemployment in normal years 26%, alcohol in nolicense years about 12%, in license years about 17% as a sole cause, and as a contributing cause in 50%. The question raised by this legislation is, in brief, "why cannot workingmen today pay for their medical treatment?" and the problem becomes practically one of dependency.

The modern method of treating dependency is to remove, if possible, its cause, and hence if sickness, non-employment, and the abuse of alcohol could be removed by some magic power, practically two-thirds of the dependency of the State would cease. That an attack upon sickness along two lines is to the highest degree advisable, is beyond argument.

First, along the line of preventive medicine, attacking the cause of sickness; and second, along the line of increased efficiency in diagnosis and treatment. Preventive medicine, affecting in its results the whole State, has always been looked upon as a State problem, and any measures that today could increase intelligently the activities of the state health authorities, removed from all political considerations and guided by the same counsel of sane men, would be for the benefit of the State.

Any measure that increased the opportunities for the poor man to obtain the best opinion in time of sickness and the best treatment would be for his benefit, that of his employer, the community and the State. The problem is practically one of the best methods of handling a question of dependency.

At present, after six months' consideration of the subject, I hold an opinion, which I hold tentatively, with a mind open to arguments that might convince me, but held none the less with some degree of positiveness as the result of my observation, namely, that John Meade is right in saying that the basis of the whole question is the question of the living wage; but I must go further and say it is a question of the living wage of the honest, sober, properly born, clean workingman; but that from the ranks of the workingmen, when they become dependents and the actual or potential recipients of charity, must be dealt with the alcoholic, the syphilitic, the subject of venereal disease, the feeble-minded, the deserter, the wilful neglector of his family.

Eliminating these, or perhaps eliminating is not the best word, let us rather say compelling these by community force to act the part of men, would cause the charity of the individual, the employer, the municipality and the State to be poured out in the fullest measure for those who have been in the past years known as the "deserving poor," and by that I mean those, who through no fault of their own, have fallen into vicissitudes that come to many of mankind.

The plan that I suggest as an extension of Mr. Meade's idea is to a degree complicated, but no more so than the proposed legislation. It considers the treatment of the chief causes that bring about dependency—outside of an insufficient wage. It involves dealing in a definite manner with the chronic alcoholic, who himself or with his family, becomes dependent. It means the committal of the dependent chronic alcoholic to the State Farm upon an indefinite sentence, at which place, having been first built up in the hospital department, he shall be set to work at employment that does not interfere with the employment of most of the organized labor of the State, namely, the preparation of materials used in State institutions, the drainage and reclamation of swamp and untilled lands, the preparation of road materials, and the building of and maintenance of State roads on an extensive scale.

Any man under 55 years of age so committed should be thus employed, and should be paid the going wage for the work that he does, and, after deducting the expense of his keep, the balance should be sent to the overseers of the poor of the town or city where he resides, to be expended for the benefit of his family. To this system should be attached the parole system, by which, if he is so built up by this treatment,—and you may say that it is treatment, because many of these men are diseased—then, at such time as he gives evidence that he can be tried out once more in the community, he may be released upon parole, but can be brought back if he fails to do his duty to himself and to his family.

I am fully aware of the practical uselessness of the present method of dealing with chronic alcoholics. A fine, a sentence with suspension of the same, a term in a local jail, another fine, a suspended sentence, a sentence to the State Farm, a release, a few weeks, or at most, months, and a return, and there is a constant stream of in-goers and out-goers, whose faces become familiar to the officers of the institution. The only advantage of the present plan is that it keeps out of the public eye for a while and off the streets a very undesirable class of the community.

Syphilis and gonorrhea should be reportable diseases. The State should furnish treatment for them. I am aware that it would be almost impossible to get a bill to this effect through any legislature, owing to the large per cent. of men who, having had gonorrhea themselves, deplore the necessary publicity. None the less, if these diseases were reportable, under heavy penalty for failure to report, and were properly treated, the amount of sickness in homes would be most materially diminished and the larger part of the gynecological clinics would close their doors.

The feeble-minded should be recognized in the public schools, taught to the extent that teaching is possible for them, prevented from marrying or producing their kind, segregated in such cases as they are a menace to the community, and carefully safeguarded under all conditions.

The man who deserts his family, leaving them dependent, or who wilfully neglects to provide for them, should have the present laws against such procedure actively enforced with heavier penalty, in that his term of sentence should be longer; he should be placed at more active employment, and his surplus of his earnings, over his keep, sent to the support of those properly dependent upon him.

If you thus take out of the community, or provide for a compulsory method for them to take care of those dependent upon them, and if you then adopt Mr. Meade's slogan and pay a living wage to the workers who would be left, I believe you will answer the question of industrial health, provided that at the same time you strengthen materially the national and State authorities in the line of preventive medicine. I can but feel that the proposed industrial health legislation is an opiate and not a remedy, that it does not strike at the fundamental reason why so large a number of workingmen cannot meet their bills in time of sickness and cannot secure proper treatment and care. The diseased condition is real, but I doubt the wisdom of the remedy proposed.

It is encouraging, however, that all this discussion shows a much more live social conscience, and the groping in this direction, and that, in an attempt to solve the great problems of the universe must, in the end, work out something for the benefit of the community. Let us be careful, however, that when we decide upon a plan definitely, it reaches the fundamental difficulty.

The proposed legislation takes from the workman, who already has but a pittance, lays a burden on the employer without taking into consideration that a large per cent. of the sickness is from preventable causes, for which he is not in any way responsible; diverts to the purposes of the act State funds that might be utilized in increasing preventive work or, as suggested by Frank Dresser of Worcester, in establishing diagnostic centers; and, after it is in force, leaves untouched and unremedied the causes of dependency which prevent he normal workingman from meeting the situation himself, and leaves him hampered and bearing too much of the burden that is laid upon the community by the man who, through defect of inheritance or lack of will power and self-control, cannot or, unless compelled, will not bear the burden of care of himself and his family. For this reason—that it is not basic in its attempt to remedy an evil—I cannot endorse it.

This legislation does attempt to remedy one of the causes of dependency, and, in a limited sense, it acts as an aid in preventive work and in the treatment of an unhealthy condition, but it does not strike at the root of the matter. It attempts to remedy an evil by legislation compulsory in its nature, instead of working out a plan by which, through the coöperation of the employee and of the employer—as Prof. Gregory has pointed out is the ideal way to accomplish reform—a system which shall be for the benefit of all concerned shall be developed.

Instead of this it grasps by the neck the workingman and orders him to pay two-fifths of the cost of things supposed to be for his benefit, and it orders him to do this while, in the same breath, it tells him that this is being done because he cannot afford to pay for it himself, for the reason that he has nothing left over from his low living wage.

At the same time it takes by the neck the employer and compels him to pay for the remedy of conditions, some of which he is individually responsible for, if his plant is not sanitary in every respect, but gives him little encouragement if his plant is kept up to the highest degree of sanitary efficiency. It compels both the employed and the employer to pay, as they now do, for those lax in State or local health preventive measures which are conducive to disease, but it also compels them, most unfairly, to pay for the sickness and distress due to the over-indulgence in appetites of fellow employees, over whose acts neither the employer nor the honest workman has little, if any, control. In other words, it notes a condition capable of great improvement, and offers what it calls a remedy for the same, but in that remedy, as I have tried to point out, it takes no action tending toward the control of those things that are in such a very large per cent. the chief cause in the production of the condition which all deplore.

Moreover, it forgets that when an act like the one proposed goes into effect, the employer will at once institute medical examination, before a man or woman is hired, to determine the health, so that none but those in full health and unblemished may be employed.

If these examinations were made to prevent a man who had heart disease from taking a job that would soon kill him, or a man with a bad rupture from taking one requiring heavy lifting, and if easier places were provided, as is done in some establishments, the examination would be very helpful; but if they meant barring from employment those not in supreme strength, tell me, since they could not get insurance nor work, who would support them and their families?

They need insurance more than any class, but they are barred. Is this a good proposition?

In closing, I repeat, if John Smith is a working man, not feeble-minded, not addicted to the abuse of intoxicating liquors, not sick from venereal disease, if he is not neglectful of his family, nor addicted to any drug habit, if he can exercise normal control over his appetites and desires, he can provide for himself and his family in health and in sickness, provided that he be paid a living wage.

If, therefore, we pay him the living wage, if we strengthen the influence of the national, State and local boards of health in work for the prevention of disease, and take care in the proper way of the individual members of society, there is no problem left.

The problem is a huge one, but the public should not be put to sleep, so that its eyes may not see the underlying cause of difficulty. Better to keep it awake, arouse it if necessary, and lay the facts before it, so that when an attack is made at this evil the very root may be the object of attack.

An opiate is not a remedy; it is soporific—not curative.

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SPRINGFIELD ACADEMY OF MEDICINE.—The March meeting of the Academy was held at 137½ State Street, Springfield, Mass., on Tuesday, March 13, at 8.15 P.M. Dr. Alfred Stengel of Philadelphia spoke on "The Diagnosis and Treatment of Chronic Anemic Conditions."

Academy Notes.

Our Nurses Registry continues its success. The present registration is 180. In the past 12 months nearly 1400 nurses have been sent out, an average of about 120 a month or 4 a day. The registry is ready to serve everybody, day or night. Telephone, River 5000. DR. L. D. CHAPIN, *Secretary.*

A WISE PRELIMINARY TO THE ADOPTION OF ANY COMPULSORY HEALTH INSURANCE ACT.[*]

BY E. A. CODMAN, M.D., BOSTON.

THE medical profession must consider the question of Health Insurance. The question is so large that it involves our duties as citizens, our interests as a profession, as well as our pocketbooks as consumers and bread-winners.

The proposed law, or any law similar to it, will confessedly cause great expense,—nominally shared by the employer, the employee and the State, but in fact paid by the public in the end. This expense has been estimated at as high as twenty-five million for Massachusetts. A fair estimate for the administrative work necessary for it is a million per annum, without considering benefits for loss of wages and fees to the physicians and hospitals.

The object of the proposed law is to improve the condition of the public health, and to furnish a better organization whereby the known facts of medical science may be applied to the relief of disease. Its proponents do not claim that it is primarily an industrial measure. It is not my intention to enter into a consideration of all the pros and cons of a plan at present so widely discussed; it is merely to suggest another point of view which seems to me worth considering.

Instead of enacting a further law which is bound to be difficult in execution, sure to cause great expense, and which is uncertain of attaining its object, why not spend some of this money in improving the machinery and conditions which we already have? Suppose, for instance, that a statute were enacted, compelling every hospital in the State of Massachusetts to publish, or to provide a register in available form of the following facts about every case which is treated by the institution:

1. The symptoms of which the patient complains.
2. The diagnosis or diagnoses on which treatment is based.
3. An outline of the treatment given.
4. The name of the physician or surgeon who undertook the treatment.
5. The complications which occurred during convalescence.
6. Evidence that an effort was made by the trustees to obtain from the patient, his friends and his physician knowledge of what the result of his treatment was at the expiration of a year.
7. Evidence to show that the Trustees had caused investigation to be made to determine the reason for failure in every case which was not relieved.

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[*] Read before the Westfield Medical Society, February 8, 1917.

A commission could be appointed and empowered to see that the trustees of every hospital in Massachusetts had competent machinery to make a practical survey of these data for each individual who had been under their care, with a view to fixing the responsibility for the treatment in each case, and to giving the physician or surgeon who undertakes such treatment the credit for success, or the opportunity to explain the failure, and to ask for the necessary equipment to prevent such failures in the future.

Already this system, under the name of the End Result System, has been recommended by the Clinical Congress of Surgeons of North America. It is already in use in some hospitals in the State, and the reasons why it is not in others, are as a rule: lack of money to provide the clerical assistance, and inertia on the part of the boards of trustees and members of the staffs. If the State of Massachusetts could spend far less than one million dollars for furnishing hospitals with the clerical help necessary to do the card cataloguing required by this system, and empower a commission to enforce it, there would be far less need for Industrial Health Insurance.

The medical profession is composed for the most part of high-minded men who acknowledge that at present the public health is not as well cared for as it could be, were organization directed more *definitely for that purpose.* The individual practitioner works hard, and realizes that only too often his work is not as well directed and effective as it should be. He would be glad to co-operate in any just way to secure a better organization for the care of the sick throughout the State; but from the time he is a medical student and an interne, he is taught by example in the hospitals, where he sees the best known men in his profession, that it is right for him to undertake the care of cases according to the number of the ward, the day of the week, his seniority standing, or his whim as to whether or not the case is interesting; but *no example shows him that he has no right to undertake the care of cases which he is not qualified to treat.* Our system of medical education is based on these so-called hospital privileges, and the medical student who has been taught high-minded medical ethics by *precept*, is constantly contrasting the *practical example* of the successful men, many of whom are his teachers, who are held up to him as the leaders in his profession.

The loose way in which these men undertake treatment without *definite written diagnosis*, or treatment without proof that their experience or study (not their positions) has qualified them to undertake the treatment of unusual or difficult conditions, is the example which results in the custom of permitting each little practitioner to do the same. To be sure, the public allows itself to be treated without diagnosis, and is still unwilling to pay for thoroughness. Under present conditions the practitioner cannot take the time to be thorough, because his patient cannot pay for his time, if he wishes to do so. Of the patients who come to the practitioner, less than 10% need expert or thorough diagnosis or treatment. The problem, therefore, is to separate the routine simple case from the unusual and difficult case. As it is now in our hospitals the "best men" wish to have both. The combination has become incompatible.

If the people of this State want to begin with compulsory measures, that compulsion should begin at the top rather than at the bottom. Compel the trustees of hospitals to do their duty by the funds entrusted to them for the care of the sick, and the advance and promulgation of medical knowledge, and the public will get better organized medical attention than it does to-day, or would get under a Health Insurance Act like the Doten Bill. In matters of reform it is customary to begin at the bottom; in the present instance, as in many others, a short-cut might be made by reforming the men at the top, whose example is copied all the way down the line with a constantly diminishing standard.

At present the failure to make universal use of the End Result System cannot be laid at the door of the bulk of medical practitioners or medical staffs, *it is much more a result of the time-honored habits of the leading members* of the medical profession, and the methods of the boards of trustees of endowed hospitals. The expense to the State of appointing a commission to see that the funds already allotted to our endowed and State and municipal institutions are efficiently used with a view to successful treatment, would be a relatively small amount compared with that of administering a health insurance act. This method would in effect be equivalent to adopting centers for expert diagnosis and skilled treatment in different parts of the State to co-operate with local practitioners. Equipment for these centers is already present in the numerous hospitals scattered about, but the *hospitals are now used too often to further the reputations of the members of their staffs, rather than as organized centers for diagnosis and skilled treatment* for the delivery of a product in the form of successful cases. The financial return to the members of hospital staffs, although indirect, is greater than the salaries which would have to be paid to obtain competent and skilled treatment.

The closed staff principle keeps many doctors out of touch with the hospital, who could work for the hospital with mutual benefit, and keeps many men in the hospital who not only do not aid, but who do interfere with, the advance of the institution in efficient methods. There is too often the old story of the dog in the manger. There is plenty of room in our hospitals, if no one is allowed to be incompetent.

If the committee which has been appointed by the legislature to consider the question of Health Insurance does not investigate these hospital abuses, and does not weigh them in the scale, it seems to me that it is not doing its full duty.

Do the advocates of Health Insurance, suppose that efficient care of the public health can be obtained by offering a panel of physicians from whom the patient may choose? This is to deny the development of modern medical science which is so vast that no single physician can possibly give satisfactory service to his cases without extensive co-operation with others.

How can an ordinary citizen select a physician under present conditions? Does he know the difference between a man who has no hospital affiliation and one who has? Do the hospital trustees themselves know who is competent? If the End Result System were in force, the hospital trustees would be obliged to know who is competent to take charge of any special class of cases. And if each hospital were a diagnostic center for its neighborhood, it also would be a registering center for the incidence of disease, and an information center to aid any patient to get competent service. It should also aid the Board of Health, and, by education of the public, be a preventive center.

A hospital is the only place where it is possible to subdivide the practice of medicine, so that a suitable relation can be established between the difficult character of the diagnosis and the treatment of an individual case, and the experience, skill and judgment of the individual physician or surgeon who is to take charge of it.

In a hospital the various branches necessary for the elaboration of different phases of work to arrive at difficult diagnoses, or complicated methods of treatment, can be subdivided so that individual physicians may each do work suited to their abilities, experience and training.

But the most rational argument for the Health Insurance Act is that it obliges the wage-earner to lay by enough to pay for care when sickness does come. At present it is claimed that a $12-a-week man does not earn enough to pay a doctor and that hence when sickness comes, he and his family become public charges. Would they become public charges, if our hospitals were organized *to cure* instead of *to treat?* In other words, if it were made the duty of trustees to see to it that the patient was cured, if he could be cured? *Few trustees even make the effort to see whether their patients are cured or not.* Much less do they attempt to place any responsibility on the members of their staffs for failure to cure or relieve. Would a panel of individual physicians get as good results as the well equipped hospitals we already have would, if they were really run for the interests of the patients instead of for the interests of the staffs? Would the incurable and bad or delayed results be a smaller percentage?

As for the self-respect which the wage-earner would get from feeling that under the Health Insurance Act he had paid for his treatment,—does the word *Compulsory* Health Insurance convey the idea of self-respect?

If the necessary funds were raised by universal state taxation, would that self-respect not be as great, and would not those who are too feeble to work share it also, instead of only the industrial class?

Remember that the trustees of our hospitals are as a rule successful business men selected for that very reason. They are the men whose fortunes the $12-a-week men have helped to make. Why not make the compulsory part apply to these trustees, so that they can use their proved ability for efficient accumulation, to show efficient disbursement of the funds entrusted to them,—really for Health Insurance.

The End Result System is not an impossible ideal. It is a practical plan recommended by the Committee on the Standardization of Hospitals of the Clinical Congress of Surgeons of North America. It has already been in partial use in some of our more progressive hospitals, and is steadily finding favor. *Even if some Health Insurance Act is to follow, why not prepare* the way for its proper use by organizing the machinery we already have for the treatment of the sick and disabled?

Some idea of the amount now spent in Massachusetts for the care of public health and sanitation, and for the maintenance and care of the sick, poor, and insane, may be derived from the following figures:

Investment of Massachusetts (Institutions) in Real and Personal Property.

Report of State Board of Insanity ..	$ 17,610,837.84
Report of State Bureau of Statistics	4,732,129.53
Report of State Board of Charities	
State Institutions	6,900,736.94
Certain (802) Endowed Institutions..	121,413,052.21
Estimated from*	
Report of State Bureau of Statistics	
Municipalities and towns	49,057.612.00
	$199,714,468.52

The annual expenditure for these purposes may be estimated as follows:

Appropriations for	
State Board of Insanity State Board of Charities State Institutions	$ 6,199,647.91
Certain (802) Endowed Institutions..	15,698,875.44
Report of Bureau of Statistics	
Municipalities and towns	13,730,586.46
Health Appropriation, 1915	385,814.84
	$36,014,924.65

This means that we have at least $200.000,000 invested for the care of our public health and for the use of that proportion of our sick, poor, and insane who need public help.

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* If the annual expense is $13,730,586.46, the investment may be determined as proportionate to the expenditure of the state institutions to their investment.

It means that in addition to this immense amount invested in real estate, buildings and equipment, we also spend $36,000,000 annually for the maintenance of these persons and for the care of the public health in general.

This estimate does not include federal aid given in pensions, in quarantine or other work for sanitation, nor private personal charity, nor private charities and associations not incorporated.

There is no means of determining how many of our 4,000,000 people actually do have or need public aid in any one year.

Now as there is an average of about one doctor to every sixty persons who are seriously sick in one year in Massachusetts, it seems as if a commission might be able to consolidate and organize the equipment and personnel we already have without $20,000,000 more per annum.

Suppose, for instance, that such a commission should oblige each hospital to keep on file End Result Cards of each patient it treats, and to send a duplicate of each card to the Central Office.

Suppose that the commission should engage a unit of diagnosticians each one of whom should be skilled in his own particular branch, e.g.:—

1. and 2. A general clinician with assistant.
3. A roentgenologist.
4. A chemist.
5. A bacteriologist.
6. A serologist.
7. An eye, ear, nose and throat specialist.
8. A cystoscopist.
9. A pathologist.
10. A record expert—

and send this diagnostic unit in turn to each hospital in the State with instructions:

1. To organize similar local units in each hospital and when necessary to teach standard methods to these local units.
2. To diagnose all cases which the local units would reserve for them, because they could not make the diagnoses themselves.
3. To organize a central diagnostic station to which each hospital might send either its cases which defied diagnosis, or specimens from these cases. (For instance, it would be folly for each little hospital to have a pathologist, if a central authoritative laboratory could be organized.)

If the commission said to each hospital: Go ahead and treat all cases in which you are sure of the diagnosis, and of your qualification to give adequate treatment; but do not let us find you treating cases without diagnosis or giving treatment for which your previous experience has not qualified you.

In most instances patients have diseases easy to diagnose and to treat. Show your judgment and learning by sticking to things you can make good on. When your staff has proved it can do that for a few years, we shall need them to treat the difficult cases which other hospitals have discarded. Also let your staff spend a portion of their time every year at our diagnostic center, studying new methods, so that they can increase the range of ther usefulness to you and your community.

MAIN IDEA.

At present there is enormous waste in our institutions:

1. From cases treated under wrong diagnosis.
2. From cases treated by physicians and surgeons not qualified to cure the patients even if they knew the diagnosis.

In most hospitals there is no person or group of persons whose duty it is to see whether the cases are cured, if curable, and if incurable, studied and recorded.

* * *

Book Reviews.

State Medicine (Health Insurance). By Drs. Charles E. Mongan, Frank E. Bateman, and George A. Miles.

The Somerville Medical Society has recently published a pamphlet entitled "State Medicine Misnamed Health Insurance," which has been compiled by the Paul Revere Committee, and is for sale for twenty-five cents. The book contains a series of papers presenting those objections that the medical profession of this State has made to health insurance as advocated by its instigators. Dr. Charles E. Mongan and Dr. Frank E. Bateman state their position in no uncertain terms. Dr. George A. Miles reviews Dr. Ferdinand Friedensburg's brochure on the "Practical Results of Workingmen's Insurance in Germany," which is a statement of the evils that have sprung up from health insurance in its thirty years' trial in Germany. Dr. Miles points out the likelihood of a similar experience in this country should we institute such a system of insurance. Other selected statements follow. This pamphlet should be thoughtfully and carefully read by every physician in the Commonwealth.

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A PUBLIC HEALTH AGENT IN MASSACHUSETTS.

In line with the Massachusetts precedent of taking the lead in public health work, is the step taken by the Massachusetts Medical Society in deciding to coöperate actively with the public health movements of the State. The employment of an agent to work under the direction of the Committee on Public Health is certainly an innovation for a state medical organization, and it is to be hoped that other states may follow the example.

The movement had its beginning in the winter of 1914, when a group of physicians and social workers met in the office of Dr. Walter P. Bowers, former president of the Massachusetts Medical Society, and discussed methods of stimulating the interest of the public in health matters. This group included Dr. Bowers, Dr. Arthur B. Emmons, 2d, Mr. Henry Copley Greene of the Massachusetts Commission for the Blind, and Miss Mary Beard of the Instructive District Nursing Association. Each member of the group was interested in a different phase of the work, but all agreed as to the need of a means of giving reliable information on medical and hygienic subjects to the public.

Dr. Bowers cited as an example of the need for intelligence and interest on the part of the lay public, the attitude of the State at large toward legislation on medical and sanitary matters. In all governmental matters of a general nature, the voters write to their representatives in the legislature, giving their opinions and urging a vote in accordance with their views. On the other hand, the public is silent on bills that would lower the standards of medical practice, or the annual anti-vaccination bill. The citizens who appear at the committee hearings are usually lawyers paid for their services by certain interests, misguided propagandists, and sensationalists. Against these are pitted a few public-spirited physicians who donate valuable time year after year in the same work, with no return except the inevitable hackneyed charge that they are "the paid representatives of the medical trust." If the people at large were sufficiently informed, such mischievous bills would be rejected with smiles of amusement, instead of being an annual nuisance, as well as a menace to the health of the State.

Dr. Emmons and Miss Beard were especially interested in the midwife question, and in the possibility that health centers, public health dispensaries, and out-patient service, if carried on by proper persons, might do much toward education of the public to the evils of midwifery and the importance of employing properly trained physicians. Mr. Greene had another side of the question to present, which had been impressed upon him in his work for the prevention of blindness. Mr. C. C. Carstens of the Society for the Prevention of Cruelty to Children, who joined the group, also presented his views of conditions seen in his work—but all agreed that the great remedy for these undesirable conditions was education of the people by properly qualified persons.

In the opinion of Dr. Bowers, the physicians of the State were the men fitted by training and experience for just this type of educational work. Many are, of course, already devoting a part of their time to it either in clinics, dispensaries, or special societies, or by means of public lectures, of which the annual series presented at the Harvard Medical School and at the Evans Memorial, in Boston, are perhaps the best known examples. In addition, there are some who by virtue of an official position, such as school physician or member of the board of health spend some part of their time in educational work. The great majority, however, either through lack of interest and initiative, fear of criticism from their fellow practitioners on the grounds of "advertising," or modesty, are taking no part in the movement to improve conditions. Lack of time can hardly be considered a valid excuse since the busiest men are doing the most of this work.

It seemed that the organization which could do most to improve the existing conditions was the state medical society, which was in a position to arouse the physicians to an appreciation of the responsibility which their training and position imposes upon them. In addition, the rapidly increasing prominence of public health work and the increasing importance of the prevention of disease, as compared with its cure, together with the various moves for socialization of medicine, such as health insurance, pointed the steps of the society toward giving added attention to public health work.

Accordingly, on June 8, 1915, at the annual meeting of the society, Dr. Bowers moved that a committee be appointed by the Council "for the purpose of hiring an agent who shall, under the direction of this committee of the Massachusetts Medical Society, assist in the dissemination of information and in the carrying on of any function of the society in public health work, legislation, social service, or similar departments of effort." The motion was carried, and the president, secretary, treasurer, chairman of the Committee on Membership and Finance, and chairman of the Committee on Public Health were appointed members of the special committee. This committee met in June, 1915, but, lacking the means of employing such an agent, took no definite action at that time.

The original group of workers, having this tentative endorsement of their efforts, began the search for a suitable agent and for money to employ him. After careful consideration, the special committee of the society recommended Mr. Edward A. Ingham, of the Department of Biology and Public Health of the Massachusetts Institute of Technology. Mr. Ingham has received the certificate in public health from the Harvard-Technology School for Health Officers, and in addition is lecturer in hygiene and sanitation in the Tufts College Medical and Dental Schools. He has made a survey of the public health work in the larger towns of Massachusetts and is otherwise well qualified by training and experience.

In June, 1916, the special committee was informed that money necessary for the salary and expenses during the first year had been raised by private subscription. On June 21 a meeting of the committee was held at the Boston Medical Library, at which Dr. Bowers was present and introduced Mr. Ingham. The committee voted as follows:

"That an agent be employed who shall assist in the dissemination of information and in the carrying on of any function of the society in public health work, legislation, social service, or similar departments of effort.

"That Edward A. Ingham be such agent.

"That the details of carrying out the plans outlined by Dr. Rosenau to the committee be entrusted to the Committee on Public Health, which shall report progress when requested to do so."

The Committee on Public Health met on September 11 and voted: "That the basis of the work to be followed by the agent, Mr. E. A. Ingham, be as follows:

"1. To stimulate the interest of the medical profession in Massachusetts in sanitation, hygiene and preventive medicine.

"2. To stimulate the cities and towns of Massachusetts to employ full-time health officers.

"3. To stimulate better work in medical inspection of schools, infant mortality, pre-natal work, district nursing, anti-tuberculosis work, industrial hygiene, sanitary engineering, and the prevention of the common communicable diseases.

"4. To investigate the health conditions of the State with reference to public health work."

In the opinion of the committee, the greatest actual value to the public health would be derived from the stimulation of the cities and towns of the State to the employment of full-time trained health officers and public health nurses. Accordingly, Mr. Ingham has devoted most of his efforts to this work up to the present time. He will be glad to have physicians of the State communicate with him in regard to places where he may be of service, and requests that each member give especial thought to health conditions in his own city or town, and as to how they may be improved. Letters may be addressed to Mr. Ingham at 222 Charles River Road, Cambridge, Mass.

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AN IMPORTANT LEGAL DECISION.

THE Supreme Judicial Court of Massachusetts, in an opinion, which appears elsewhere in this issue, deciding the case of Jacob Huxen vs. Maryland Casualty Company, seems again to narrow the interpretations of the Workingmen's Compensation Act, as far as medical services under the act are concerned.

The medical profession may well consider certain portions of this decision and the possibilities of remedial legislation. Perhaps the Industrial Accident Board should be given by law the final say as to what or what is not unusual. The evidence in this case shows conclusively its serious nature, and to the medical mind the need of continued treatment is apparent. Certainly this very type of case was in the mind of the Industrial Accident Board if the recommendation of the board, which appears on page 51 of their First Annual Report, on which the present law was based, is considered. They recommended the following:

"The Industrial Accident Board requests that the legislature give the board the power to require the payment of bills for medical and surgical treatment, medicine, medical and surgical supplies, crutches and apparatus when necessary, beyond the first two weeks after the injury, in unusual cases, where the injury is so serious as to require and warrant such additional medical treatment."

The present law follows this quite closely, but apparently, as interpreted by the court, not exactly. The recent decision also says:

"It is not in an ordinary case, requiring longer medical attendance, that the discretion of the Board may be exercised to change this attendance to the expense of the insurer. It is only in 'unusual cases' that they may do so. There should be grave doubt whether a case where the employee is able to go from his home in Cambridge to an office in Boston could be so unusual as to be within the purview of the act."

If the ability of a man to go to a doctor's office is to be a basis as to whether or not the case is unusual, what of the disabilities from fractures of the legs and ankles, the serious results of contracted scars after burns, ununited fractures of the upper extremities, the recurring dislocations at the shoulder, or the various forms of ruptured muscles or associated bursitis, which are disabling when not treated, and which a man with a family cannot afford to pay for out of his small compensation payment?

The latter part of the decision, which passes upon the amount of the fees, is not of as much importance to the medical profession as the decision that a serious case, partly treated, can be taken from a competent man and turned over to someone selected by the insuring company. If there should be a bad result, who would be held responsible? It is not sufficient to say that the insurance company must pay for the damage in compensation. A permanent injury continues as a handicap after the compensation period has ceased, and may lead, not only to a community loss, but to a public charge.

The liberal administration of the medical aspects of the law under the Massachusetts Industrial Accident Board seems to have received a further set-back. The medical profession acted promptly after the "Pecott" decision, and they should carefully consider the bearings of this latest decision.

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MEDICAL NOTES.

TWO NEW MEDICAL JOURNALS.—A previous issue of the JOURNAL announced the proposed publication of two new medical journals. Copies of the first issues are at hand. One, *Archives Médicales Belges,* published in Paris, is concerned chiefly, for the time being, with military surgery, although it is not the purpose of this journal to confine itself to that special field of medicine. It also contains a large abstract department, reviewing French, English and American medical journals. It is the sole organ of Belgian medical science in exile.

Endocrinology, which begins its existence with the January number, is published by the Association for the Study of the Internal Secretions, and is the bulletin of that association. It is an attractive volume of 128 pages, printed in large, clear type, and contains, as a useful innovation, a six-page cross index of subjects and authors. Inasmuch as more than half the space of the book is given to an extensive abstract department covering 193 articles, and as these subjects and authors are included in the index, it becomes a most important and valuable part of the journal. For a physician interested in the internal secretions, this journal will fill a long-felt want and be of the greatest possible use.

WAR RELIEF FUNDS.—On March 17 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	$536,027.38
French Wounded Fund	206,297.62
Armenian Fund	163,162.17
Permanent Blind Fund	103,999.95
British Imperial Fund	91,660.35
French Orphanage Fund	86,546.91
Surgical Dressings Fund	79,496.47
Boston Ambulance Fund	46,740.56
French Blind Fund	3,411.00

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 10, 1917, the number of deaths reported was 278, against 292 for the same period last year, with a rate of 18.77, against 20.02 last year. There were 38 deaths under one year of age, against 42 last year, and 97 deaths over 60 years of age, against 88 last year.

The number of cases of principal reportable diseases were: diphtheria, 81; scarlet fever, 41; measles, 168; whooping cough, 5; typhoid fever, 2; tuberculosis, 49.

Included in the above were the following cases of non-residents: diphtheria, 15; scarlet fever, 6; tuberculosis, 8.

Total deaths from these diseases were: diphtheria, 3; typhoid fever, 1; tuberculosis, 23.

Included in the above were the following deaths of non-residents: diphtheria, 1; tuberculosis, 3.

MEN IN INDUSTRIAL MEDICINE FORM SOCIETY.—An organization for the promotion of a mutual extension of knowledge among physicians or others interested in industrial medical work, was formed by a group of prominent Massachusetts physicians and business men at a meeting held at the Boston City Club on March 2, 1917.

"About a year ago I introduced our present plan for medical work in Cambridge," said Mr. J. W. Fellows, on opening the meeting. "In selecting the course to be followed, and to avoid the many pitfalls of error, we proceeded slowly and carefully. Industrial medical work demands far different considerations than the medicine of private practice or regular hospitals. What will the cost be? Will this particular idea be applicable to our plant, even though it has been successful in some other? What will the effect be on our labor?—these are only a few of the questions that we had to consider and discuss before any suggestion could be accepted. The articles in the medical and trade journals were of great assistance to us. But it was early seen that an organization of men who were doing this work, and could exchange their ideas, would be of great mutual aid. Men who have studied successfully these problems could assist their brothers just entering upon the work. I would like to help other manufacturers; our plant physicians would welcome the chance to give their experience to the medical men."

Dr. Woodward, the president of the Massachusetts Medical Society, was present at the meeting. Dr. Woodward is fully cognizant of the success in factory sanitation and medical betterment work by the profession.

To prevent accidents and to treat them adequately when they do occur, to watch over the health and sanitary conditions of the plant, require the careful thought of the plant medical director. Most small towns have a health officer. Factories from a few hundreds to several thousands, numbers that equal a town or small city, need medical assistance to keep their force up to its highest efficiency.

It is intended to have no definite organization for this society, but to invite all who are interested in the work. Such a loose organization will, then, demand no officers nor the election of new members. Dr. W. I. Clark, Jr., of Worcester, was nominated secretary and asked to arrange for future conferences. In order to extend further the influence and activities of the organization among manufacturers, a committee was appointed, to consist of Mr. Fellows, Mr. McSweeney, and Mr. Alexander.

HOSPITAL BEQUEST.—By the will of the late ex-Mayor Edward Glines of Somerville, the Somerville Hospital receives a bequest of $10,000.

Obituary.

ROBERT ALEXANDER DOUGLAS-LITHGOW, M.D.

ROBERT ALEXANDER DOUGLAS-LITHGOW, a descendant of two of the oldest Scottish families, the Douglas and the Linlithgow, died at the Massachusetts General Hospital on March 2d from the effects of a severe fall received some weeks ago. Dr. Douglas-Lithgow was born at Belfast, Ire., where members of the family had settled in 1660. His early education was obtained at the well-known school of Down, Cornor and Dunmore. He then entered Queen's College, Belfast, from which he graduated. Later he graduated from Edinburgh University and St. Andrew's, Scotland, and was a member of the council for the last-named university. He was for some time a student at Guy's Hospital, London, and achieved further skill in the medical profession as assistant to some of the largest practitioners in England. He established himself in London and built up a large and important practice.

Dr. Douglas-Lithgow was almost as well known in the literary world as in the world of medicine. He was for many years a great literary student, writing a number of well-known papers of great value on Shakespeare. At twenty years of age he dedicated a volume of poems, by permission, to Lord Tennyson, considered as a rare distinction on the part of the famous poet laureate. Dr. Douglas-Lithgow's essays written on the poets from Chaucer to Wordsworth are notable in English literature. They were published by the Royal Society of Literature of which, at that time, Lord Halsbury was president and Dr. Douglas-Lithgow was vice-president and foreign secretary.

In 1900 he came to this country, where he became generally interested in study of the American Indians and the names they had left as heritage. He compiled a valuable collection of all the Indian places and proper names in New England, which was published in 1911. He was also the author of "Nantucket, a History," published in 1914. He was a retired member of the Massachusetts Medical Society.

Dr. Douglas-Lithgow knew many well known literary persons and among his friends were Robert Browning, Lord Houghton, Barry Cornwall, Charles Dickens, Lord Tennyson, Eliza Cook and the Duke of Argyle.

Soon after coming to this country his wife died. He married again and is survived by his second wife and a son.

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HENRY DWIGHT HOLTON, M.D.

DR. HENRY DWIGHT HOLTON, one of the leading physicians of Vermont, died at his home in Brattleboro, Vt., on February 12. Dr. Holton was born in Rockingham, Vt., July 24, 1838, and received his early education at Vermont Academy. He then went to Boston, where he studied under Dr. J. H. Warren; to New York, where he studied under Dr. Valentine Mott, and entered the University of New York. He received his degree of M.D. from this university in 1860. In 1867 he settled in Brattleboro, and began a practice that was to continue with honor and distinction for over fifty years. In that year he was made president of the Connecticut River Medical Association, and in 1873 he was elected president of the Vermont Medical Association. He was also appointed to the chair of materia medica and general pathology in the medical department of the University of Vermont, which position he held for thirteen years. During this time the enrollment of students had increased from 40 to 260. He was appointed a trustee of the University and of the State Agricultural College, offices he held for eighteen years. He served nine years as treasurer of the American Public Health Association, and was its president in 1902. As an active force in the organization of the pan-American medical congress, he was chairman of the board of trustees and executive committee. He was a member of the American Medical Association and of many other medical societies, including membership in the British Medical Association.

For twelve years he was secretary of the state board of health, having been instrumental in its establishment and having been a member of its board for many years. He also held many positions of local prominence, and was at one time member of the Vermont Senate. There were few activities of a public nature, not only in his own town and community, but in the state at large, that did not feel his influence and were not benefactors of his able services. He is survived by two grandchildren.

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JOE VINCENT MEIGS, M.D.

DR. JOE VINCENT MEIGS, a leading physician and surgeon of Lowell, Mass., died in that city of cerebral hemorrhage on March 9. Dr. Meigs was born in Lowell on January 22, 1867, and received his early education in that city. He was graduated from the Jefferson Medical College, Philadelphia, in 1889, and in that year established himself in practice in his native city, where he continued up to the time of his death to gain for himself distinction as a practitioner of merit, and devotion from a wide circle of appreciative patients. He served for several years as associate medical examiner of the Fifth Middlesex District, and on the death of Dr. John C. Irish, in 1898, he succeeded him in the position of medical examiner, which position he held at the time of his death. He was on the staff of the Lowell General, St. John's, and the Lowell Corporation Hospitals, was a member of the American Medical Association, the Massachusetts Medico-Legal Society, and the Massachusetts Society of Examining Physicians. He was president of the Middlesex North District Medical Society, and a vice-president of the Massachusetts Medical Society. For several years past, Dr. Meigs has been president of the Yorick Club. He was also member of the Vesper Country Club.

Dr. Meigs was in great demand both as a surgeon and as a consultant, and his untiring devotion to his large practice was a matter of concern to his friends, who saw in his ceaseless activity a danger to his health and powers. That he preferred to devote his life to busy service rather than to limit his energies, even though it might entail serious consequences, is significant of his attitude throughout his life toward his profession, and is the explanation of the high esteem and loyalty with which he is regarded by the community in which he lived. His city and his profession have lost a worthy and beloved member.

Miscellany.

WORKINGMEN'S COMPENSATION ACT.

Industrial Accident Board,
Boston, Massachusetts.

FINDING AND DECISION OF THE INDUSTRIAL ACCIDENT BOARD AS TO REASONABLENESS OF PHYSICIAN'S BILL.

JACOB J. HUXEN	*Employee*
J. T. SCULLY FOUNDATION COMPANY	*Employer*
MARYLAND CASUALTY COMPANY	*Insurer*
G. W. MORSE, M.D.	*Physician*

The evidence in the above case was heard by the Chairman of the Board at a hearing held at the rooms of the Industrial Accident Board, 1 Beacon Street, Boston, Massachusetts, on Wednesday, April 26, 1916, and reported to the full Board for finding and decision.

The employee received an injury in the course of and arising out of his employment on October 28, 1915. The Maryland Casualty Company was the insurer of his employer.

The insurer contested the reasonableness of the bill, and, furthermore, contended that the patient should have been turned over to Dr. Chase, its own physician, after Dr. Morse had rendered first-aid treatment.

DR. GEORGE W. MORSE, 30 Pinckney Street, Boston, testified that he was called to attend employee on October 26, by Mr. Monahan, and found him suffering with a burn from live steam; the upper part of his body, which was exposed, was burned. He treated the employee on the job and considered it a serious enough case to be sent to the hospital, but employee refused to go to the hospital. Employee went home and wanted the doctor to take care of him, which he did. He visited employee October 28, 29, 30, November 1, 3, 4, 5, 6, 8 and 10 at his home in Cambridge. After November 12 employee came to the doctor's office in Boston 21 times and the doctor charged $2 a visit. Nothing has been paid in this case. For the first-aid visit he charged $10 and for the visits to employee's home in Cambridge charged $3. The visits to the house were not simple ones, as employee had to be stripped to the waist and had to be completely covered with dressings; he had a second degree burn over the shoulder. The dressing smelled very badly after a while and had to be changed and it was quite a job to put on this dressing and for what he had to use he thought it was a perfectly reasonable charge. It was a very serious case. When employee came to his office he had to bandage around the chest and shoulder and clean the area of granulation. There was the back area in which there was proud-flesh and this had to be cleaned off. Has never treated any cases from the Maryland Casualty Company before, that he remembers. He did not know anything about the arrangement which the insurer had with the New England Equitable Insurance Company with regard to treatment on that job. He made no attempt to get into communication with either the J. T. Scully Foundation Company or the Maryland Casualty Company before continuing with the treatment.

FRANCIS H. MONAHAN testified that, at the time of the accident, he was in charge of the first-aid department at the new Technology building in Cambridge, where the accident occurred, for the New England Equitable Insurance Company, for which the Stone & Webster Engineering Corporation had the contract. The employees of the sub-contractors were also treated in the first-aid department through an arrangement of their insurers with the New England Equitable Insurance Company. The arrangement with the Maryland Casualty Company was that he, Mr. Monahan, should give first-aid treatment, then turn the cases over to Dr. Chase of Cambridge, the physician for the Maryland Casualty Company. In the case of Mr. Huxen he felt that it was beyond him to give any treatment and therefore called up Dr. Chase at once. Not finding Dr. Chase in, he called Dr. Morse, the physician for the New England Equitable Insurance Company and under the arrangement between the insurers and the sub-contractors and the New England Equitable Insurance Company reported the injury immediately to the New England Equitable Insurance Company. Dr. Morse arrived within twenty minutes after the accident and rendered first-aid treatment.

JACOB J. HUXEN, the employee, testified that his wages were 75 cents an hour.

The insurer introduced in evidence the following letter written to the employee on December 16, 1915:

December 16, 1915.

17882 T. Comp. 24309
J. T. Scully Found. Co.

Huxen.
Mr. Jacob J. Huxen,
846 Main Street,
Cambridge, Mass.

Dear sir:—

Regarding your medical attention, we think it advisable for you to call on our Dr. D. E. Chase, 1619 Massachusetts Ave., Cambridge, where you will receive first-class treatment free of charge. But if you wish to continue with Dr. Morse, we will allow him $1.00 an office visit.

Very truly yours
(Signed) E. I. TAYLOR.

Dr. Morse testified that the employee showed him this letter and that he continued to treat him. The insurer also introduced in evidence a bill sent to it by Dr. Morse under date of December 10, in the amount of $30 for visits to the employee of October 28, 29, 30, November 1, 2, 4, 5, 6, 8 and 10. Dr. Morse testified that if this bill had been paid at the time submitted, he would have accepted it in full payment of all charges up to November 10, but apparently he had forgotten to make any charge for first-aid treatment on the bill. He is now claiming payment for treatment to the amount of $80.

Dr. Morse's charges were as follows:

First-aid treatment, October 28, 1915, $10; visits to Cambridge, October 29, 30, November 1, 2, 4, 5, 6, 8, and 10 at $3 each, $27; this bill of $37 covered the first fourteen days after the injury. After the first two weeks after the injury, his charges were as follows: Visit to Cambridge, November 12, $3; office visits and dressings, November 15, 17, 19, 25, 27, 29, December 2, 4, 7, 9, 11, 14, 16, 18, 23, 27, 31, 1915, and January 6, 11, and 20, 1916, a total of 20 visits, $40.

The Industrial Accident Board find upon the evidence that there is due the physician in this case from the insurer the amount of $80 as per the physician's claim.

The Board find that because of the nature of the injury in this case it is an unusual case and the physician is entitled to recover not only for his services during the first two weeks after the injury, but for treatment rendered beyond the first two weeks. Although the accident was promptly reported, no offer of treatment was made by the insurer until its letter to the employee under date of December 16, 1915, and that that offer was merely a suggestion to the employee that he call on their physician, Dr. Chase, but stated that if he wished to continue with Dr. Morse they would allow Dr. Morse $1. a visit.

We find under the circumstances that Dr. Morse was justified in continuing with the case, that his treatment was necessary and that his charges are reasonable.

(Signed) Frank J. Donahue, *Chairman.*
Dudley H. Holman
David T. Dickinson
Joseph A. Parks
Thomas F. Boyle

Special Board 1582.

Jacob Huxen	*Employee*
J. T. Scully Foundation Company	*Employer*
Maryland Casualty Company	*Insurer*
G. W. Morse, M.D.	*Physician*

Decree of Supreme Judicial Court on Appeal.

Rugg, C. J. The only questions raised by this appeal relate to the obligation of an insurer under the Workmen's Compensation Act to pay the fees of a physician to an injured employee. The first point to be decided is whether the physician can be a party to a proceeding under the Act. It is provided by St. 1911, c. 751, Part iii, s. 13, as amended by St. 1914, c. 708, s. 12, that "Fees of attorneys and physicians and charges of hospitals for services under this act shall be subject to the approval of the Industrial Accident Board. If the association and any physician or hospital, or the employee and any attorney, fail to reach an agreement as to the amount to be paid for such services, either party may notify the Board, which may thereupon call for the formation of a committee of arbitration in accordance with the provisions of this act, and all proceedings thereunder shall be in accordance with the provisions of this act." It was held in Panusuk's case, 217 Mass. 589, that the questions relating to services of physicians were proper for consideration under the Act, although it was raised by the employee and not the physician. But since the fees are to be fixed by a committee of arbitration in case of disagreement, it seems to follow necessarily from the terms of the Act, that, where the physician is the party interested in that matter, he may be a party to the proceedings.

It is not contended that Dr. Morse was not called rightly to attend the injured employee and is entitled to recover for the two-week period following the injury when under the Act the insurer is bound to provide medical attendance. The controversy arises as to the attendance subsequent to the expiration of that period.

The services of the physician were rendered under these circumstances: The employee was injured by being burned with live steam. Dr. Morse was the physician employed by another insurance company which insured other subscribers performing work on the Technology buildings, where the injury occurred, and does not appear to have been the regular physician of the employee. He thought, on examination, that the employee should go to the hospital, but the employee refused, and the physician, at his request, treated him at his home for a period of two weeks. After the expiration of that period he was able to go from his home to the doctor's office and was treated there. The entire evidence about the kind of treatment after the expiration of the two-week period is this, from the physician: "When the employee came to his office he had to bandage around the chest and shoulder and clean the area of granulation. There was the back area in which there was proud-flesh, and this had to be cleaned off." The question is whether this constitutes an unusual case within the meaning of the first sentence of St. 1914, c. 708, s. 1, amending Part ii, s. 5 of the Act so as to read as follows: "During the first two weeks after the injury, and, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the Board, for a longer period, the association shall furnish reasonable medical and hospital services and medicines, when they are needed." It is manifest that the Legislature did not intend to impose all expenses of medical attendance upon the insurer. The obligation to provide such attendance as an absolute duty is confined to two weeks after the injury. It is manifest that in the aggregate there must be many cases where medical attendance may be required for a longer period. It is not in an ordinary case requiring longer medical attendance that the discretion of the Board may be exercised to charge this attendance to the expense of the insurer. It is only in "unusual cases" that they may do so. There would be grave doubt whether a case where the employee is able to go from his home in Cambridge to an office in Boston could be so unusual as to be within the purview of the Act. But there is a further circumstance in the case at bar which renders it impossible to say as matter of law that the finding of the Board was unwarranted. After there had been several treatments at the doctor's office in Boston, the insurer wrote the employee as follows: "Regarding your medical attention, we think it advisable for you to call on our Dr. D. E. Chase, 1619 Massachusetts Ave., Cambridge, where you will receive first-class treatment free of charge. But if you wish to continue with Dr. Morse, we will allow him $1. an office visit." There is here no intimation that the attendance of some physician was not required under the Act. The offer to pay one dollar per visit to Dr. Morse, or to provide its own physician free of charge, may have been found to be an admission that under the Act the insurer was bound to furnish medical attendance, and hence that it was an "unusual" case. As the finding of the Board must stand if there is any evidence on which is might reasonably have been founded, it cannot be pronounced unwarranted.

The letter from the insurer to the employee was shown by the latter to Dr. Morse, who continued to treat him. It is manifest that, after this letter was shown to him, he knew that attitude of the person whom it is now sought to hold liable for his services. There is no intimation that Dr. Chase, the physician proffered by the insurer free of charge to the employee, was not competent and a proper person to treat the employee. The fact that the employee was able to go to the office for treatment makes it plain that the case was no longer critical. It was not then a case of emergency. Under the conditions here disclosed there is no "other justifiable cause" for the continued attendance of Dr. Morse after December 16, the date of the letter from the insurer to the employee. If he chose to continue to treat the employee at the expense of the insurer under these circumstances, he must do so on the terms offered. The Act, by the latter part of St. 1914, c. 708, s. 1, does not place the fees of a physician under the control of the Industrial Accident Board when there is no emergency, when there appears to be no reason why the physician provided by the insurer may not render the necessary service efficiently and satisfactorily, and when the physician who is making the claim knows of the terms upon which alone the insurer is willing to be responsible to him and he continues thereafter to render the service.

The decree is to be modified by striking out the narration and ajudication as to the letter of December 16, 1915, and by reducing the amount due to Dr. Morse to $73, and as thus modified is affirmed.

So ordered.

Correspondence.

THE YOUNG BILL.

Somerville, March 7, 1917.

Mr. Editor:—It looks to me as though the Journal was doing all it could to advance the "Young" bill without coming out openly in its favor. The editorials of February first and March first might serve as an address advocating it. I should not be in the least surprised to be told that they had been written by either Prof. Doten, or Dr. Rubinow, or Mr. Michael Davis. I have heard all three speak in advocacy of what they call "health insurance." It is the same paternalistic German theme or scheme, treated in the same way.

Now, at the special meeting of the Council held Dec. 20, 1916, a certain resolution was unanimously adopted, to the effect that "We, the Council of the Massachusetts Medical Society, assembled in meeting for the purpose of considering health insurance, most respectfully request that no definite plan on health insurance, or recommendation in regard to health insurance, be submitted to the Legislature until a further knowledge of the proposed laws be spread among the citizens of the Commonwealth."

The two medical sponsors for the "Young" bill are Dr. Wade Wright of the Massachusetts General Hospital who is *not* a member of the Massachusetts Medical Society, and Dr. Roger I. Lee of the Massachusetts General Hospital, and a consulting editor of the Boston Medical and Surgical Journal, who *is* a member of the Massachusetts Medical Society, and in the Middlesex South District.

In February a very numerously attended meeting of the Middlesex South District unanimously put itself on record as opposed to the "Young" bill.

Has Dr. Roger Lee paid any regard to the resolution of the Council or to the recorded opposition of the members of the Middlesex South District?

He boldly advocates the "Young" bill with its insidious, pernicious and tyrannical medical provisions!

And this, at the greatest crisis in our country's history, when our every effort and thought should be to our country's needs!

Frank E. Bateman, M.D.

NOTICES.

The Commonwealth of Massachusetts.

Committee on Public Safety, State House, Boston.—Doctors, dentists and veterinaries are needed in the Medical Department of the Reserve Corps. Application blanks on examination for admission to the Reserve Corps and information as to the requirements of each of the branches of the service named may be obtained by application to this committee.

Charles H. Cole,
Chairman, Committee on Land Forces.

Boston Medical Schools Begin Training in Military Medicine.—The medical schools of Harvard University, Tufts College and Boston University have united in a movement to give instruction in military medicine. This is part of a general movement on the part of the medical schools of the country to prepare their students so that they may serve as medical officers in the army or navy. A meeting of representatives of the leading medical schools was held in Washington, January 6, 1917, at which it was agreed that such instruction ought to be given as a measure of medical preparedness for war, and the coöperation of the Medical Department of the Army and of the Navy was sought in furnishing instructors for such courses.

Lieutenant-Colonel W. P. Chamberlain of the Medical Corps of the Army, and Surgeon G. F. Freeman of the Medical Corps of the Navy, have been delegated to give this instruction in Boston. Representatives of the three medical schools met and agreed to have joint lectures for the upper classes of the three schools, in order to complete the course in the short time remaining before graduation. Lectures will begin next Wednesday and will be held on Mondays, Wednesdays and Fridays, at 4.30 p.m., at the Harvard Medical School.

Beginning March 27, and continuing on Tuesday and Thursday afternoons, at 4.30, Colonel Chamberlain will also give a similar course of lectures for graduates in medicine. These lectures are designed primarily for members of the Medical Reserve Corps, but are open to any members of the medical profession who desire to enter the Medical Reserve Corps, or are interested in preparing themselves for service in the event of war. This course is given under the auspices of the Harvard Graduate School of Medicine, and is open to the profession without charge. Physicians wishing to take this course should apply to the Secretary of the Harvard Graduate School of Medicine, Longwood Avenue, for enrollment.

SOCIETY NOTICES.

The Children's Hospital, Boston.—A clinical meeting will be held at the Children's Hospital on Friday, March 23, 1917.

New England Pediatric Society.—The forty-eighth meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, March 30, 1917, at 8.15 p.m.

The following papers will be read:—

1. "Studies in Infant Feeding: The Mineral Constituents of Milk." Henry I. Bowditch, M.D., and Alfred W. Bosworth, Boston.
2. "Anemia in the Newborn." Karlton G. Percy, M.D., Boston.
3. "Nephritis in Childhood, with Especial Reference to Functional Tests." Lewis W. Hill, M.D., Boston.

Light refreshments will be served after the meeting.

Maynard Ladd, M.D., *President.*
Richard M. Smith, M.D., *Secretary.*

The Norfolk District Medical Society.—A regular meeting of the Society will be held at the New England Hospital for Women and Children, Dimock Street, Roxbury, Tuesday, March 27, at 4 p.m.

Inspection of buildings and hospital equipment at 4 p.m. Business meeting and papers at 4.45 p.m. A ten-minute paper will be presented from each department.

A Brief History of the Hospital, Mrs. Alice B. Crosby, Secretary of Board of Directors; The Surgical Treatment of Dysmenorrhea, Emma B. Culbertson, M.D.; The Value of Hospital Treatment of Pneumonia in Children, Sara A. Bond, M.D.; Report of Wassermann Tests on Blood from Umbilical Cord in One Thousand Cases, Hannah G. Myrick, M.D.; Use of Adult Human Blood in the Treatment of Hemorrhage in the Newborn, Marion Nute, M.D.; Technic of Infant Feeding, Edith Hale Swift, M.D.

Annual meeting, Tuesday, May 8. The Censors will meet, Thursday, May 10, at 2 p.m., for the examination of candidates. Bradford Kent, M.D., *Secretary.*